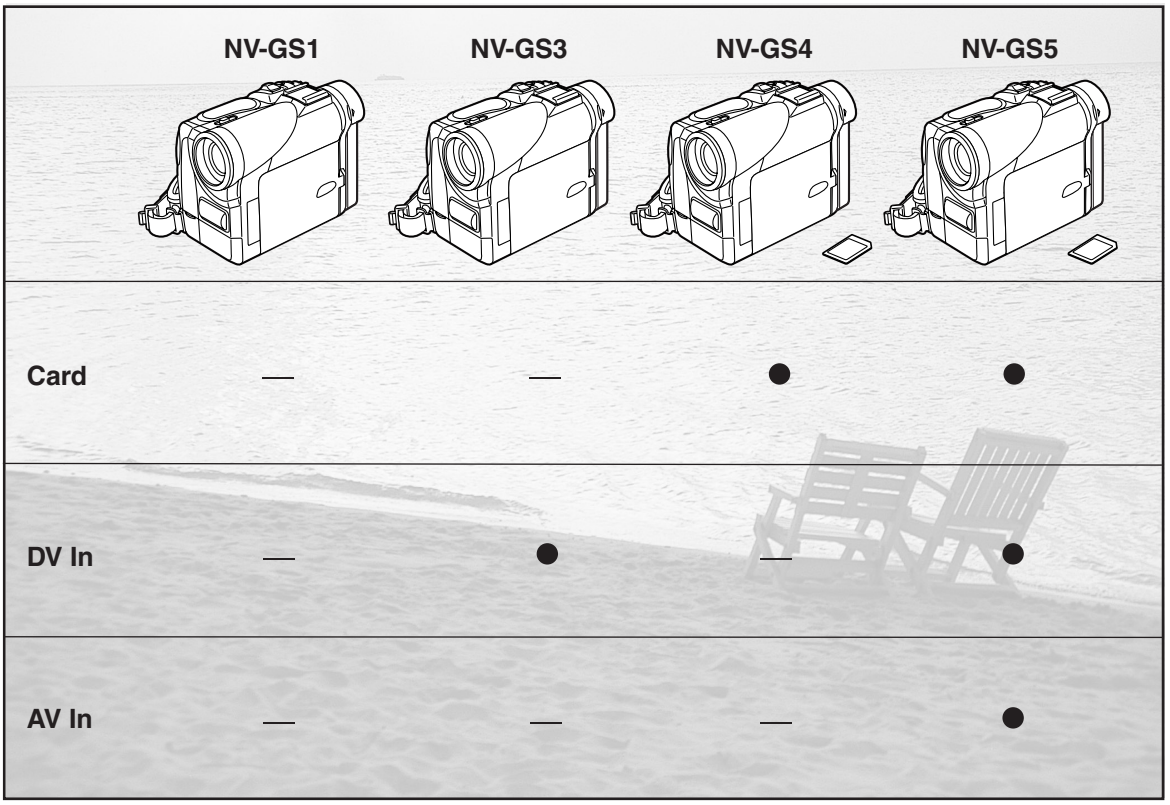
Panasonic

Digital Video Camera

Model No.

NV-GS1B
NV-GS3B
NV-GS4B
NV-GS5B

Operating Instructions



Mini DV PAL

MultiMediaCard™

SD™

CERTIFIED USB™

Before use, please read these instructions completely.

VQT9670

Before Use

Dear Customer,

We would like to take this opportunity to thank you for purchasing this Panasonic Movie Camera. Please read these Operating Instructions carefully and keep them handy for future reference. Please note that the actual controls and components, menu items, etc. of your Movie Camera may look somewhat different from those shown in the illustrations in these Operating Instructions.

Information for Your Safety

Movie Camera

- The rating plate is on the underside of the Movie Camera.

AC Adaptor

- The rating plate is on the underside of the AC Adaptor.
- As this equipment gets hot during use, operate it in well ventilated place; do not install this equipment in a confined space such as a bookcase or similar unit.
- To reduce the risk of fire, electric shock or product damage, do not expose this equipment to rain, moisture, dripping or splashing and ensure that no objects filled with liquids, such as vases, shall be placed on the equipment.

Caution for AC mains lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience. A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced, please ensure that the replacement fuse has a rating of 5-amperes and it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced. If you lose the fuse cover, the plug must not be used until a replacement cover is obtained. A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted, please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

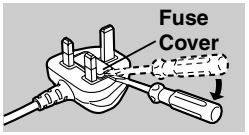
Under no circumstances should either of these wires be connected to the earth terminal of the three-pin plug, marked with the letter E or the Earth Symbol ⏚.

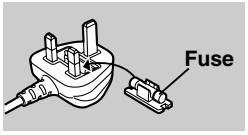
Before Use

Remove the Connector Cover as follows.

How to replace the Fuse

1) Remove the Fuse Cover with a screwdriver.
2) Replace the fuse and attach the Fuse Cover.





Operating Instructions

- These Operating Instructions apply to models NV-GS1, NV-GS3, NV-GS4 and NV-GS5.
- The illustrations used in these Operating Instructions show model NV-GS5, however, parts of the explanation refer to different models.
- Depending on the model, some functions are not available.
- Windows is a trademark or registered trademark of Microsoft Corporation U.S.A.
- SD Logo is a trademark.
- All other company and product names in the operating instructions are trademarks or registered trademarks of their respective corporations.

Files recorded on a MultiMediaCard or SD Memory Card (NV-GS4/GS5 only)

It may not be possible to play back the files on this Movie Camera recorded on and created by other equipment or vice versa. For this reason, check the compatibility of the equipment in advance.

Pages for reference

Pages for reference are indicated with an arrow, for example: **(➜ 00)**

Use only the recommended accessories.

WARNING

Do not remove the cover (or back); there are no user serviceable parts inside. Refer servicing to qualified service personnel.

Carefully observe copyright laws.

Recording of pre-recorded tapes or discs or other published or broadcast material for purposes other than your own private use may infringe copyright laws. Even for the purpose of private use, recording of certain material may be restricted.

Contents

Before Use

Information for Your Safety 2
Contents 3
Standard Accessories 4
Optional Accessories 4
Controls and Components 5
Remote Controller 7
Power Supply 9
Charging Time and Available Recording Time 9
Lens Cap and Grip Belt 10
Attaching the Shoulder Strap 10
Inserting a Cassette 10
Turning on the Movie Camera and Selecting Modes 11
Using the Viewfinder/LCD Monitor 11
Using the Menu Screen 12
List of Menus 13
Setting Date and Time 16
Internal Lithium Battery Recharge 16
LP Mode 16
Audio Recording Mode 16

CAMERA Mode

Recording 17
Photoshot 18
Zoom In/Out Functions 18
Digital Zoom Function 19
Image Stabilizer Function 19
Fade In/Out Functions 19
Cinema Function 20
Backlight Compensation Function 20
Colour Night View Function 20
Quick Start 20
Wind Noise Reduction Function 21
Recording in Special Situations 21
Recording in Natural Colours 21
Adjusting White Balance Manually 22
Manual Shutter Speed Adjustment 23
Manual Iris Adjustment 23
Manual Focus Adjustment 23
Digital Effect Functions 24

VCR Mode

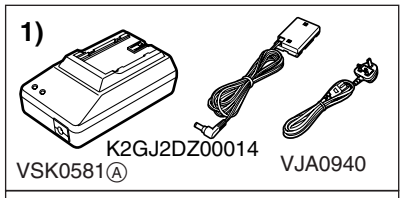
Playing Back 26
Finding a Scene You Want to Play Back 26
Slow Motion Playback 27
Still Playback/Still Advance Playback 27
Finding the End of Recording 27
Index Search Functions 28
Playback Zoom Function 28
Playback Digital Effect Functions 29
Playing Back on Your TV 30
Audio Dubbing 30
Copying on an S-VHS (or a VHS) Cassette 31
Recording the Contents of Other Equipment 31
Using the DV Cable for Recording 32
Personal Computer Connection Kit 32
USB Connection Kit 32

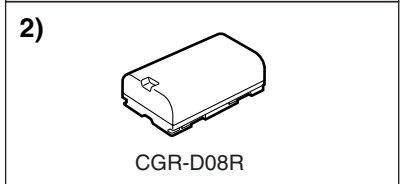
CARD Mode

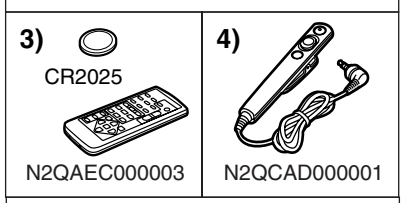
Using a Card 33
Recording on a Card 33
Playing Back a Card 36
Recording Pictures on a Card to a Tape 37
Slide Show 38
Editing a Slide Show 38
Creating a Title 39
Adding a Title 39
Protecting the Files on a Card 40
Deleting the Files Recorded on a Card 40
Formatting a Card 41
Writing Printing Data on a Card 41

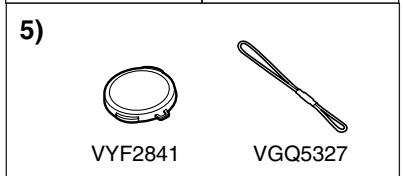
Others

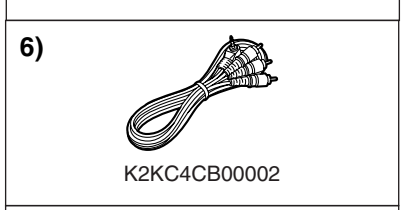
Indications 42
Owner ID 43
Warning/Alarm Indications 43
Notes and Hints 43
Cautions for Use 48
Before Requesting Repair (Problems and Solutions) 50
Explanation of Terms 52
Specifications 53
Index 54

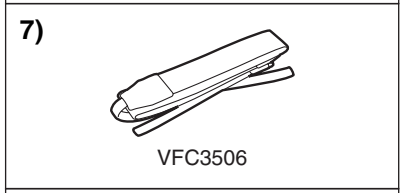


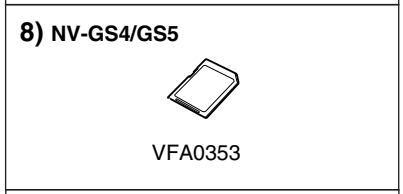


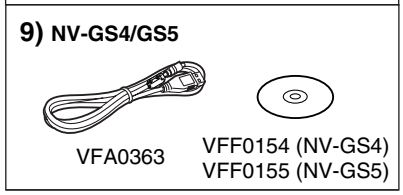












Standard Accessories

Illustrated on the left are accessories supplied with the Movie Camera.

1) AC Adaptor, DC Input Lead and AC Mains Lead (➜ 9)
2) Battery Pack (➜ 9)
3) Remote Controller and Button-Type Battery (➜ 7, 8)
4) Free Style Controller (➜ 7)
5) Lens Cap (➜ 10)
6) AV Cable (➜ 30, 31)
7) Shoulder Strap (➜ 10)
8) SD Memory Card (NV-GS4/GS5 only) (➜ 33)
9) USB Connection Kit (NV-GS4/GS5 only) (➜ 32)

Optional Accessories

1) AC Adaptor (VW-AD9B)
2) Battery Pack (Lithium/CGR-D08S/CGR-D120/800mAh)
3) Battery Pack (Lithium/CGP-D14S/CGP-D210/1400mAh)
4) Battery Pack (Lithium/CGR-D16S/CGR-D220/1600mAh)
5) Battery Pack (Lithium/CGP-D28S/CGP-D320/2800mAh)
6) Battery Pack (Lithium/CGR-D53S/CGR-D815/5300mAh)
7) Car Battery Charger (VW-KBD2E)
8) Wide Conversion Lens (VW-LW3007E)
9) Tele Conversion Lens (VW-LT3014E)
10) ND Filter (VW-LND30E)
11) MC Protector (VW-LMC30E)
12) Stereo Microphone (VW-VMS2E)
13) Shoe Adaptor (VW-SK11E)
14) Tripod (VZ-CT55E)
15) Tripod with Remote Controller (VZ-CTR1E)
16) Editing Controller (VW-EC500E/VW-EC1E)
17) Personal Computer Connection Kit (VW-DTA10B/VW-DTA9E)
18) Edit Cable (VW-K8E)
19) Edit Terminal Conversion Adaptor (VW-CE1E)
20) DV Cable (VW-CD1E)
21) DV Editing Software with DV Interface Board (VW-DTM21E)
22) DV Editing Software with DV Interface Card (VW-DTM22E)
23) DV Editing Software (VW-DTM20E)
24) Internet Videophone Software (VW-DTC1E)

The following is for the NV-GS4/GS5 models only.

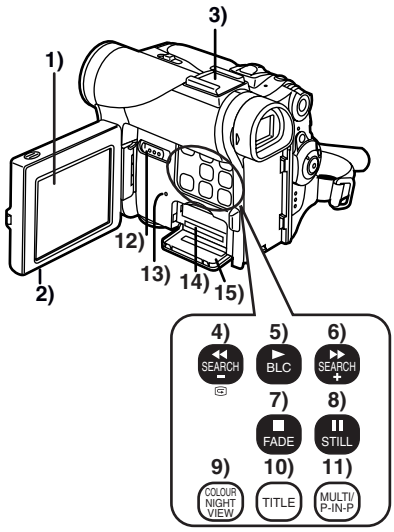
25) SD Memory Card Application Software (VW-SWA1E)
- "TitleStudio" software for title creation, and "SD-Jukebox" software for recording music are included. (However, this Movie Camera cannot play back music.)

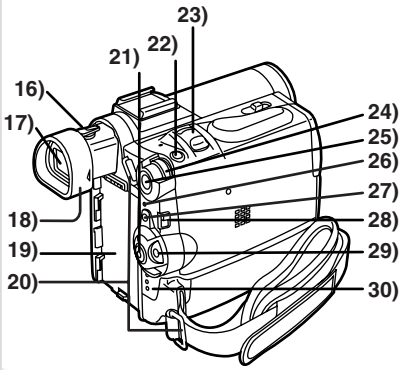
26) MultiMediaCard (VW-MMC8E/VW-MMC16E)
27) SD Memory Card (RP-SD008/RP-SD016/RP-SD032/RP-SD064)
28) PC Card Adaptor for SD Memory Card (BN-SDABPE)
29) USB Reader Writer for SD Memory Card (BN-SDCAPE)

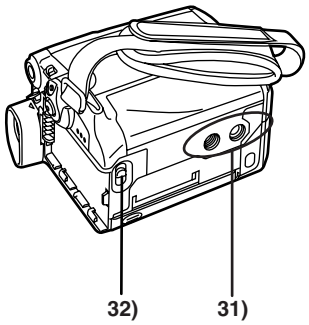
- Some optional accessories may not be available in some countries.

shop @ Panasonic

- Order accessory and consumable items for all Audio Visual Products with ease and confidence either by telephoning our Customer Care Centre on **08705 357357 Mon–Friday 9:00am–5:30pm**
- Or go on line through our Internet Accessory ordering application at **www.panasonic.co.uk.**
- Most major credit and debit cards accepted.
- All enquires transactions and distribution facilities are provided directly by Panasonic UK Ltd.
- It couldn't be simpler!







Controls and Components

1) LCD Monitor (➜ 11, 50)

● Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD Monitor screen. However, this is not a malfunction and does not affect the recorded picture.

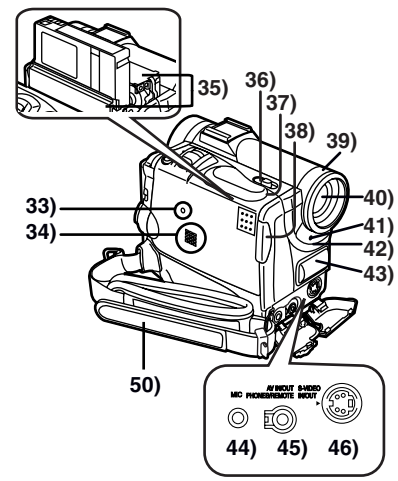
2) LCD Monitor Open Knob [OPEN▼] (➜ 11)
3) Accessory Shoe
- Accessories, such as a stereo microphone (VW-VMS2E; optional), are attached here.

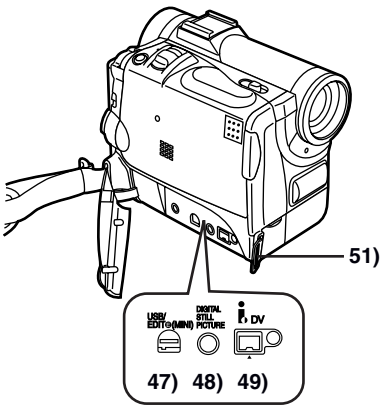
4) Rewind/Review Button [◀◀] (➜ 26)
Reverse Search Button [SEARCH−] (➜ 17)
Recording Check Button [⟲] (➜ 17)
5) Play Button [▶] (➜ 26, 38)
Backlight Button [BLC] (➜ 20)
6) Fast Forward/Cue Button [▶▶] (➜ 26)
Forward Search Button [SEARCH+] (➜ 17)
7) Stop Button [■] (➜ 26, 38)
Fade Button [FADE] (➜ 19)
8) Pause Button [❚❚] (➜ 27, 38)
Still Button [STILL] (➜ 18)
9) Colour Night View Button [COLOUR NIGHT VIEW] (➜ 20)
10) Title Button [TITLE] (NV-GS4/GS5 only) (➜ 39)
11) Multi/P-in-P Button [MULTI/P-IN-P] (➜ 25, 39)
12) Tape/Card Photoshot Selector [TAPE/CARD] (NV-GS4 only)
Tape/Card Photoshot/Card Mode Selector [TAPE/CARD/CARD MODE] (NV-GS5 only) (➜ 33)
13) Card Access Lamp [ACCESS] (NV-GS4/GS5 only) (➜ 33)
14) Card Slot (NV-GS4/GS5 only) (➜ 33)
15) Card Slot Cover (NV-GS4/GS5 only) (➜ 33)
16) Eyepiece Corrector Knob (➜ 11)
17) Viewfinder (➜ 11, 50)

● Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the Viewfinder screen. However, this is not a malfunction and does not affect the recorded picture.

18) Eyecup
19) Battery Holder
20) Shoulder Strap Holders (➜ 10)
21) Recording Start/Stop Button (➜ 17)
22) Photoshot Button [PHOTO SHOT] (➜ 18, 33, 37, 39)
23) Zoom Lever [W/T] (➜ 18)
24) Multi-Function Dial [PUSH] (➜ 12, 21, 23, 26)
25) Menu Button [MENU] (➜ 12)
26) Quick Start Recording Lamp (➜ 20)
27) Quick Start Recording Button [QUICK START] (➜ 20)
28) Mode Selector Switch [AUTO/MNL/FOCUS] (➜ 17, 21, 22, 23)
29) Off/On Mode Selector Switch [OFF/ON/MODE] (➜ 11, 17, 48)
30) Operation Mode Lamps [CAMERA/VCR] (NV-GS1/GS3 only)
[CAMERA/VCR/CARD P.B] (NV-GS4/GS5 only) (➜ 11, 17, 26, 36)
31) Tripod Receptacle
- Used for mounting the Movie Camera on an optional tripod.

32) Battery Eject Button [BATT] (➜ 9)



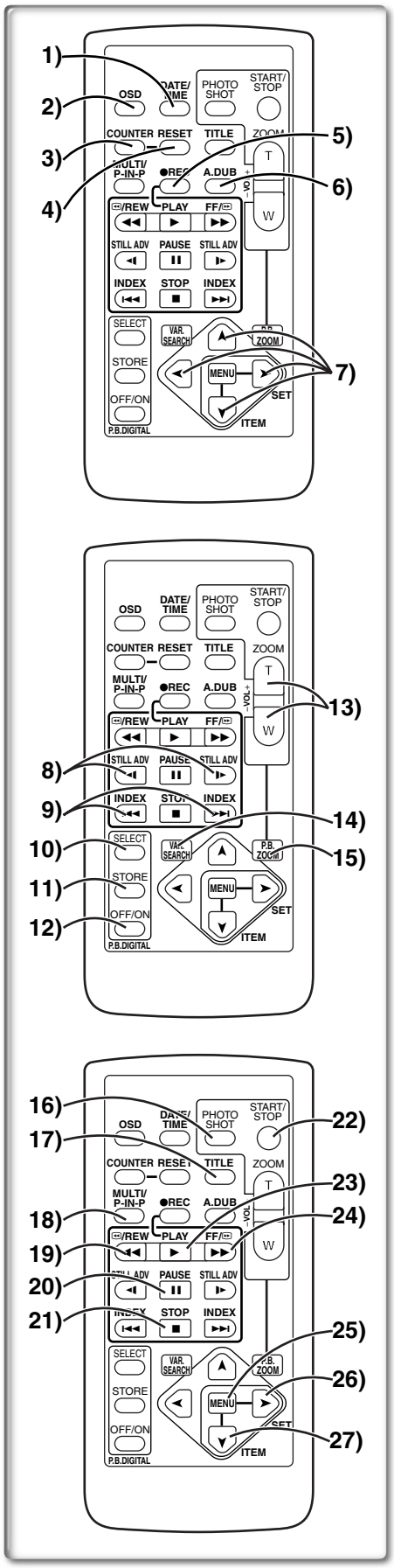


33) Reset Button [RESET] (➜ 43)
34) Speaker (➜ 26)
35) Cassette Holder
36) Cassette Eject Lever [OPEN/EJECT] (➜ 10)
37) Cassette Compartment Cover (➜ 10)
38) Cassete Cover Close Button [PUSH CLOSE] (➜ 10)
39) Lens Hood (➜ 50)
40) Lens
41) Recording Lamp (➜ 17)
42) White Balance Sensor (➜ 22)
Remote Control Sensor (➜ 8)
43) Microphone (built-in, stereo) (➜ 18)
44) Microphone Socket [MIC]
- Connect with an external microphone or audio equipment. (When this socket is in use, the built-in microphone does not operate.)

45) Audio-Video Input/Output Socket [AV IN/OUT]
(Input function on NV-GS5 Model only) (➜ 30, 31)
Headphone Socket [PHONES] (➜ 45)
Free Style Controller Socket [REMOTE]
- Connecting an AV Cable or Free Style Controller to this socket activates the Movie Camera's built-in speaker, but connecting a headphone, etc. deactivates it.

46) S-Video Input/Output Socket [S-VIDEO IN/OUT]
(Input function on NV-GS5 Model only) (➜ 30, 31)
47) USB Socket [USB] (NV-GS4/GS5 only) (➜ 32)
Edit Socket [EDIT (MINI)]
48) Digital Still Picture Terminal [DIGITAL STILL PICTURE] (➜ 32)
49) DV Terminal (➜ 32)
- Connect this to the digital video equipment.

50) Grip Belt (➜ 10)
51) Lens Cap String Holder (➜ 10)



Remote Controller

Using the wireless Remote Controller that is supplied with the Movie Camera, most of the Movie Camera functions can be operated from a distance.

Buttons on the Remote Controller

1) **Date/Time Button [DATE/TIME] (➜ 43)**
2) **Indication Output Button [OSD] (➜ 30)**
3) **Counter Indication Shift Button [COUNTER] (➜ 43)**
4) **Reset Button [RESET] (➜ 52)**
5) **Recording Button [REC] (Available only with NV-GS3/GS5) (➜ 32)**
6) **Audio Dubbing Button [A.DUB] (➜ 30)**
7) **Cursor Buttons for Variable Speed Search Function [▲, ▼] (➜ 26)**
   Direction Buttons for Playback Zoom Function [▲, ▼, ◄, ►] (➜ 28)
8) **Slow Motion/Still Advance Buttons [◄I, I►] (◄I: reverse, I►: forward) (➜ 27)**
9) **Index Search Buttons [I◄◄, ►►I] (I◄◄: reverse, ►►I: forward) (➜ 28)**
10) **Selection Button [SELECT] (➜ 29)**
11) **Store Button [STORE] (➜ 29)**
12) **Off/On Button [OFF/ON] (➜ 29)**
13) **Zoom/Volume Button [ZOOM/VOL] (➜ 18, 26, 28)**
14) **Variable Speed Search Button [VAR. SEARCH] (➜ 26)**
15) **Playback Zoom Button [P.B. ZOOM] (➜ 28)**

The following buttons function in the same manner as the corresponding buttons on the Movie Camera.

16) **Photoshot Button [PHOTO SHOT] (➜ 18, 33, 37, 39)**
17) **Title Button [TITLE] (Available only with NV-GS4/GS5) (➜ 39)**
18) **Multi-Picture/Picture-in-Picture Button [MULTI/P-IN-P] (➜ 39)**
19) **Rewind/Review Button [◄◄] (➜ 17, 26)**
20) **Pause Button [❚❚] (➜ 27, 38)**
21) **Stop Button [■] (➜ 26, 38)**
22) **Recording Start/Stop Button [START/STOP] (➜ 17)**
23) **Play Button [►] (➜ 26, 38)**
24) **Fast-forward/Cue Button [►►] (➜ 17, 26)**
25) **Menu Button [MENU] (➜ 12)**
26) **Set Button [SET] (➜ 12)**
27) **Item Button [ITEM] (➜ 12)**

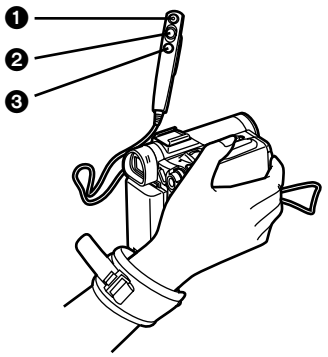
■Free Style Controller

This controller allows the scene to be shot in various angles, high to low and is also convenient when the Tripod is used. When you do not use this controller, attach the clip to the Grip Belt for convenience.
This controller allows the camera to be used more conveniently by a left-handed user.

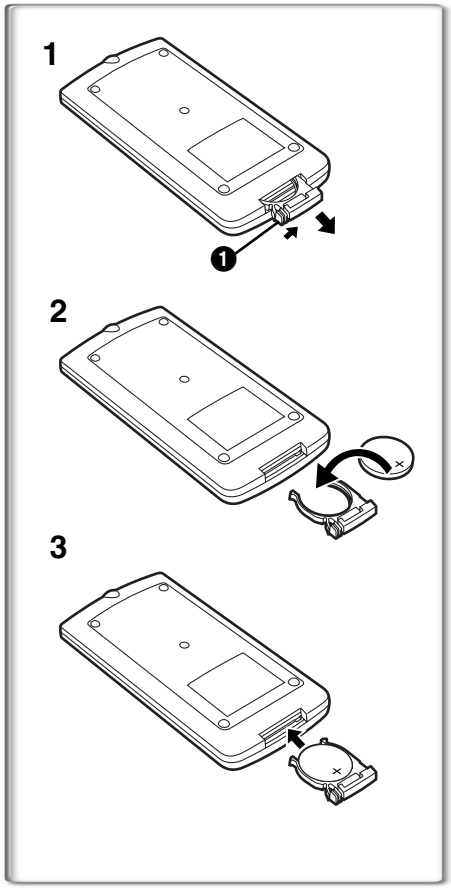
❶**Recording Start/Stop Button [●]**

❷**Zoom Lever [W/T]**

❸**Photoshot Button [PHOTO SHOT]**



The Grip Belt detached from the Movie Camera can also be used binding round the wrist as shown in the illustration on the right.



■Inserting a Button-type Battery

Before using the Remote Controller, insert the supplied button-type battery.

1 While pressing the Stopper ❶, pull out the Battery Holder.

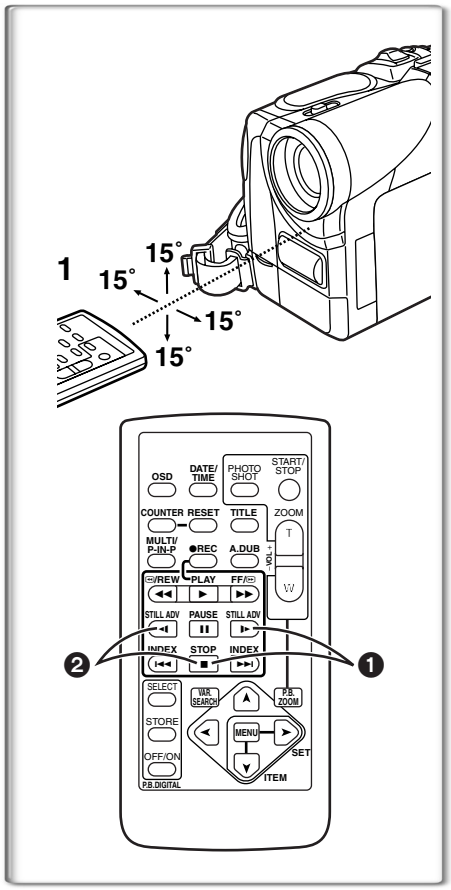
2 Insert the button-type battery with the (+) marking facing upward.

3 Insert the Battery Holder into the Remote Controller.

- When the button-type battery is exhausted, replace it with a new CR2025 battery. (A battery is normally expected to last about 1 year. However, it depends on operation frequency.)
- Make sure to match the poles correctly when inserting the battery.

WARNING

"THE LITHIUM BATTERY IS A CRITICAL COMPONENT (TYPE NUMBER CR2025 MANUFACTURED BY PANASONIC).
IT MUST NEVER BE SUBJECTED TO EXCESSIVE HEAT OR DISCHARGE. IT MUST THEREFORE ONLY BE FITTED IN EQUIPMENT DESIGNED SPECIFICALLY FOR ITS USE.
REPLACEMENT BATTERIES MUST BE OF THE SAME TYPE AND MANUFACTURER.
THEY MUST BE FITTED IN THE SAME MANNER AND LOCATION AS THE ORIGINAL BATTERY, WITH THE CORRECT POLARITY CONNECTIONS OBSERVED.
DO NOT ATTEMPT TO RE-CHARGE THE OLD BATTERY OR RE-USE IT FOR ANY OTHER PURPOSE. IT SHOULD BE DISPOSED OF IN WASTE PRODUCTS DESTINED FOR BURIAL RATHER THAN INCINERATION."



■Using the Remote Controller

1 Direct the Remote Controller to the Remote Control Sensor of the Movie Camera and press an appropriate button.

- Distance from the Movie Camera: Within approximately 5 metres
- Angle: Within approximately 15° in the vertical and horizontal directions from the central axis

- The above operative ranges are for indoor use. Outdoors or under strong light, the Movie Camera may not operate properly even within the above ranges.
- Within a 1-metre range, you can also use the Remote Controller on the LCD Monitor side of the Movie Camera.

Selecting Remote Controller Modes

When 2 Movie Cameras are used simultaneously, they can be operated individually by selecting different Remote Controller Modes.

- If the Remote Controller Mode of the Movie Camera and that of the Remote Controller do not match, [REMOTE] Indication is displayed.

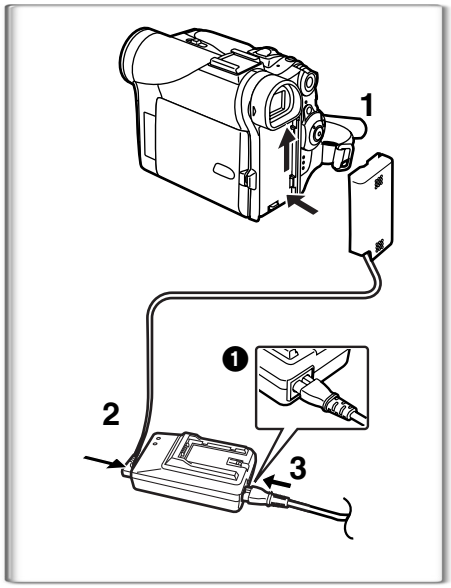
Setup on the Movie Camera:

Set [REMOTE] on the [OTHER FUNCTIONS] Sub-Menu to the desired Remote Controller Mode. **(➜ 12)**

Setup on the Remote Controller:

[VCR1]: Press the [▶] Button and [■] Button simultaneously. ❶
[VCR2]: Press the [◀] Button and [■] Button simultaneously. ❷

- When the battery in the Remote Controller is replaced, the mode is automatically reset to [VCR1] Mode.



Power Supply

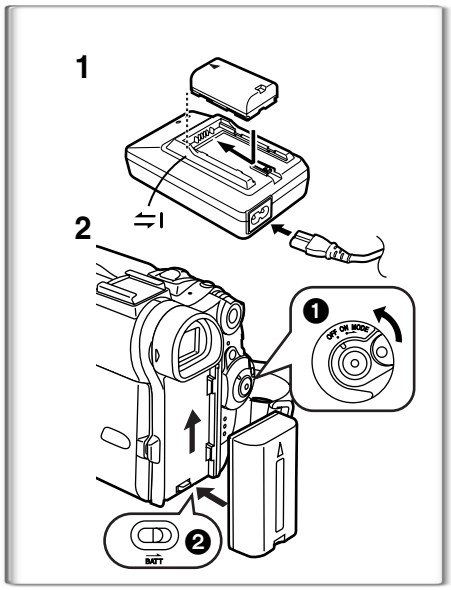
■Using the AC Adaptor

1 Connect the DC Input Lead to the Movie Camera.

2 Connect the DC Input Lead to the AC Adaptor.

3 Connect the AC Mains Lead to the AC Adaptor and the AC mains socket.

- The AC Mains Lead's outlet plug cannot be pushed fully into the AC Adaptor socket. A gap will remain as shown ❶.
- Before disconnecting the power supply, set the [OFF/ON/MODE] Switch on the Movie Camera to [OFF].



■Using the Battery

Before use, fully charge the Battery.

1 Attach the Battery to AC Adaptor and charge it.

- Since the Battery will not be charged when the DC Input Lead is connected to the AC Adaptor, disconnect it from the AC Adaptor.
- The [POWER] Lamp and [CHARGE] Lamp lights up, and charging starts.
- When the [CHARGE] Lamp goes off, charging is completed.

2 Attach the charged Battery to the Movie Camera.

Disconnecting the Power Source

Set the [OFF/ON/MODE] Switch ❶ to [OFF] and, while sliding the [BATT] Button ❷, slide the Battery or DC Input Lead upward to disconnect it.

■Using the Car Battery Charger

If you use the Car Battery Charger (VW-KBD2E; optional), you can supply power to the Movie Camera and charge the battery inside your car. For further information, refer to the instruction manual of the Car Battery Charger.

- Be sure to start the car engine before you connect the Car Battery Charger, otherwise the fuse may blow.

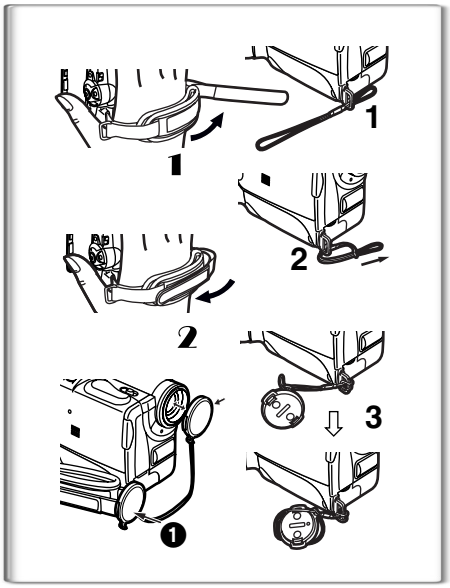
- For other notes concerning this item, see page 43.

		NV-GS1/GS3	NV-GS4/GS5
CGR-D08R CGR-D08S CGR-D120	Ⓐ	1 h.	1 h.
	Ⓑ	2 h 10 min. (1 h 35 min.)	2 h 10 min. (1 h 35 min.)
	Ⓒ	1 h 05 min. (50 min.)	1 h 05 min. (50 min.)
CGP-D14S CGP-D210	Ⓐ	1 h 50 min.	1 h 50 min.
	Ⓑ	3 h 40 min. (2 h 40 min.)	3 h 40 min. (2 h 40 min.)
	Ⓒ	1 h 50 min. (1 h 20 min.)	1 h 50 min. (1 h 20 min.)
CGR-D16S CGR-D220	Ⓐ	2 h.	2 h.
	Ⓑ	4 h 20 min. (3 h 10 min.)	4 h 20 min. (3 h 10 min.)
	Ⓒ	2 h 10 min. (1 h 35 min.)	2 h 10 min. (1 h 35 min.)
CGP-D28S CGP-D320	Ⓐ	3 h 15 min.	3 h 15 min.
	Ⓑ	7 h 40 min. (5 h 35 min.)	7 h 40 min. (5 h 35 min.)
	Ⓒ	3 h 50 min. (2 h 50 min.)	3 h 50 min. (2 h 50 min.)
CGR-D53S CGR-D815	Ⓐ	5 h 20 min.	5 h 20 min.
	Ⓑ	14 h 10 min. (10 h 25 min.)	14 h 10 min. (10 h 25 min.)
	Ⓒ	7 h 05 min. (5 h 15 min.)	7 h 05 min. (5 h 15 min.)

Charging Time and Available Recording Time

Ⓐ Charging Time
Ⓑ Maximum Continuous Recording Time
Ⓒ Intermittent Recording Time
(Intermittent Recording Time is the available recording time with repeated recording and stopping actions.)

- "1h10min." indicates 1 hour and 10 minutes.
- Battery CGR-D08R is supplied.
- The times shown in the table are approximate times. The numbers in parentheses indicate the recording time when the LCD Monitor is used. In actual use, the available recording time may be shorter.
- The times shown in the table are for continuous recording at a temperature of 20°C and humidity of 60%. If the Battery is charged at a higher or lower temperature, the charging time may be longer.



Lens Cap and Grip Belt

■Attach the Lens Cap

To protect the Lens surface, attach the Lens Cap.

1 Pass the end of the Lens Cap String through the Lens Cap String holder.

2 Pass the other end of the String through the loop made by the String itself and pull it toward the direction indicated by an arrow.

3 Fit the lens cap onto the lens cap string.

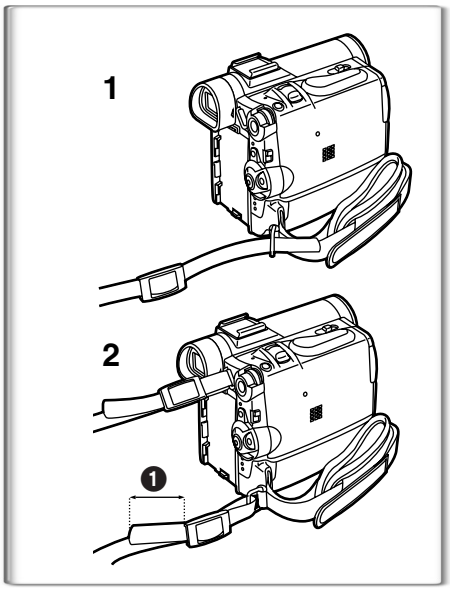
- The removed Lens Cap can be hooked onto the Grip Belt ❶. (When you are not recording, be sure to keep the Lens Cap attached to the Lens for protection.)

■Adjust the Grip Belt

Adjust the length of the Grip Belt to the size of your hand.

1 Detach the tip of the Grip Belt and adjust the length of it.

2 Reattach the Grip Belt.



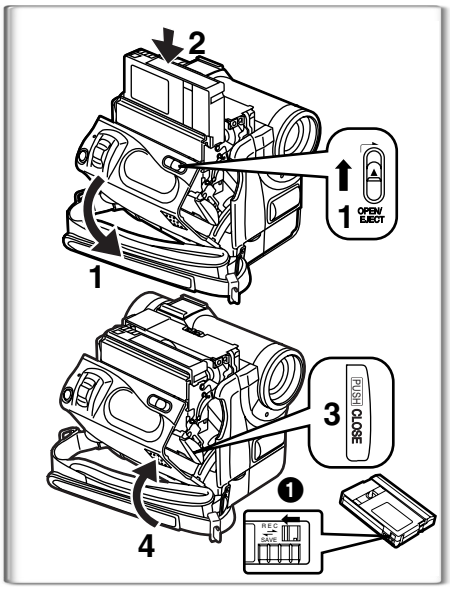
Attaching the Shoulder Strap

We recommend that you attach the Shoulder Strap before going out of doors to record so as to avoid dropping the Movie Camera.

1 Pull the end of the Shoulder Strap through the Shoulder Strap Holder on the Movie Camera.

2 Fold the tip of the Shoulder Strap, run it through the Shoulder Strap Length Adjuster, and pull it.

- Pull it out more than 2 cm ❶ from the Shoulder Strap Length Adjuster so that it cannot slip off.



Inserting a Cassette

1 Slide the [OPEN/EJECT] Lever toward the front and pull down to open the Cassette Compartment.

2 Insert a Cassette.

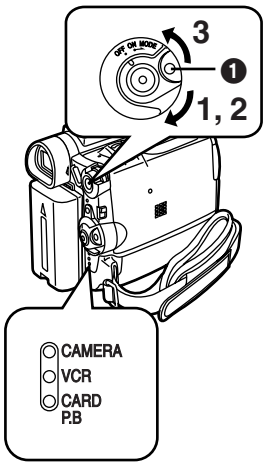
3 Close the Cassette Compartment by pressing the [PUSH CLOSE] Button.

4 Close the Cassette Compartment Cover.

■Accidental Erasure Prevention

Opening the accidental erasure prevention slider ❶ on the cassette (by sliding it in the [SAVE] arrow direction) prevents recording. To enable recording, close the accidental erasure prevention slider (by sliding it in the [REC] arrow direction).

- For other notes concerning this item, see page 44.



Turning on the Movie Camera and Selecting Modes

Turn on the power first and then select modes.

How to Turn on the Power

1 Rotate the [OFF/ON/MODE] Switch to [ON] while pressing the centre button ❶.

- The [CAMERA] Lamp lights up.

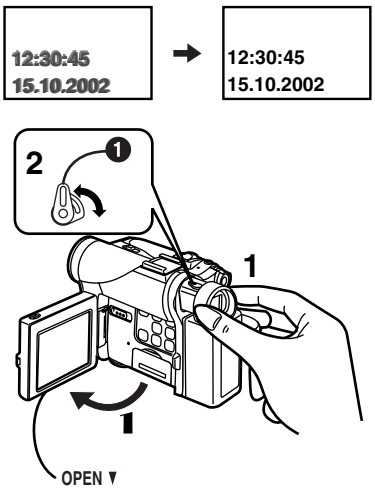
How to Switch Modes

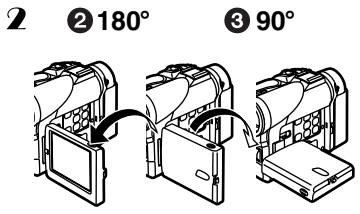
2 Rotate the [OFF/ON/MODE] Switch.

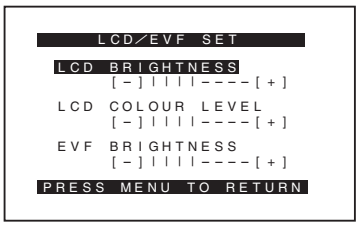
- With each rotate, the Mode changes.
- The appropriate Mode Lamp lights up.

How to Turn off the Power

3 Rotate the [OFF/ON/MODE] Switch to [OFF] while pressing the centre button ❶.







Using the Viewfinder/LCD Monitor

Using the Viewfinder

Before using the Viewfinder, adjust the field of view so that the displays inside the Viewfinder become clear and easy to read.

1 Pull the Viewfinder.

2 Adjust by turning the Eyepiece Corrector Knob ❶.

Using the LCD Monitor

With the LCD Monitor open, you can also record the picture while watching it.

1 Bring the LCD Monitor out about 90° in the direction of the arrow.

- The Viewfinder goes off.

2 Adjust the LCD Monitor angle according to the desired recording angle.

- The LCD Monitor can rotate a maximum of 180° ❷ from the vertical position to the upward direction and a maximum of 90° ❸ to the downward direction. Forcefully rotating the LCD Monitor beyond these ranges will damage the Movie Camera.

Closing the LCD Monitor

Push the LCD Monitor until it is securely locked.

Adjusting Brightness and Colour Level

When [LCD/EVF SET] on the [DISPLAY SETUP] Sub-Menu is set to [YES], the following items are displayed. **(➜ 12)**

LCD Brightness [LCD BRIGHTNESS]

It adjusts the brightness of the image on the LCD screen.

LCD Colour Level [LCD COLOUR LEVEL]

It adjusts the colour saturation of the image on the LCD screen.

Brightness of the Viewfinder [EVF BRIGHTNESS]

It adjusts the brightness of the image in the Viewfinder.

To Adjust

Press the [PUSH] Dial and select the item to be adjusted, and then turn the [PUSH] Dial to raise or lower the number of vertical bars in the Bar Indication.

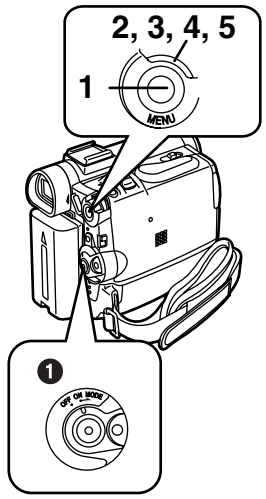
- A larger number of vertical bars indicates stronger brightness or colour saturation.

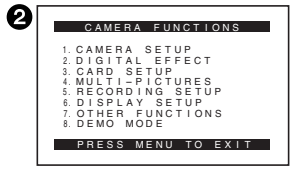
Increasing the Brightness of the Entire LCD Monitor

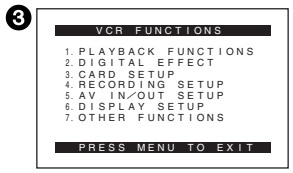
Set the [LCD MODE] on the [DISPLAY SETUP] Sub-Menu to [BRIGHT].

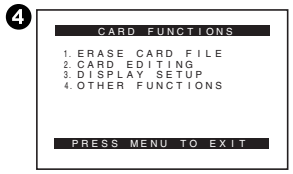
- These adjustments do not affect the recorded images.

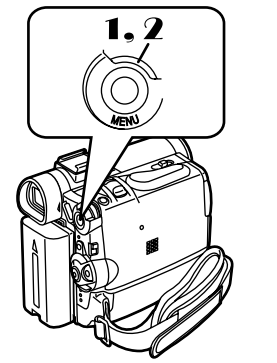
- For other notes concerning this item, see page 50.

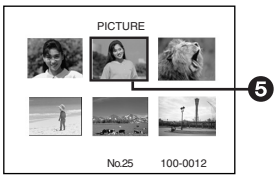












Using the Menu Screen

To facilitate the selection of a desired function or setup, this Movie Camera displays various function setups on Menus.

1 Press the [MENU] Button.

- The Menu corresponding to the Mode selected by using the [OFF/ON/MODE] Switch ❶ is displayed.
- When the [CAMERA] Lamp is on, the Camera Function Menu is displayed. ❷
- When the [VCR] Lamp is on, the VCR Function Menu is displayed. ❸
- When the [CARD P.B] Lamp is on, the Card Function Menu is displayed. ❹ (NV-GS4/GS5 only)

2 Turn the [PUSH] Dial to select a desired Sub-Menu.

- Turn the [PUSH] Dial to display the highlightened item.

3 Press the [PUSH] Dial to display the selected Sub-Menu.

4 Turn the [PUSH] Dial to select the item to be set.

5 Press the [PUSH] Dial to set the selected item to a desired mode.

- With each press of the [PUSH] Dial, the cursor [▶] moves to the next mode. Menu items that cannot be used in combination with the selected item are displayed in dark blue.

- While a Menu is displayed, you cannot record or play back. Menus can be displayed during playback but not during recording. The above operations can be done using the [MENU] Button, [SET] Button and [ITEM] Button on the Remote Controller. **(➜ 7)**

To Exit the Menu Screen

Press the [MENU] Button again.

About the Menu Mode Setting

The setting selected on the Menu will be retained even when the Movie Camera is turned off. However, if the Battery or AC Adaptor is disconnected before turning off the Movie Camera, the selected setup may not be retained. (But, the setups of [EFFECT2] **(➜ 24)** are not retained.)

- Menu operation flow is shown in this text by >>.

■File Selection in the Card Playback Mode (NV-GS4/GS5 only)

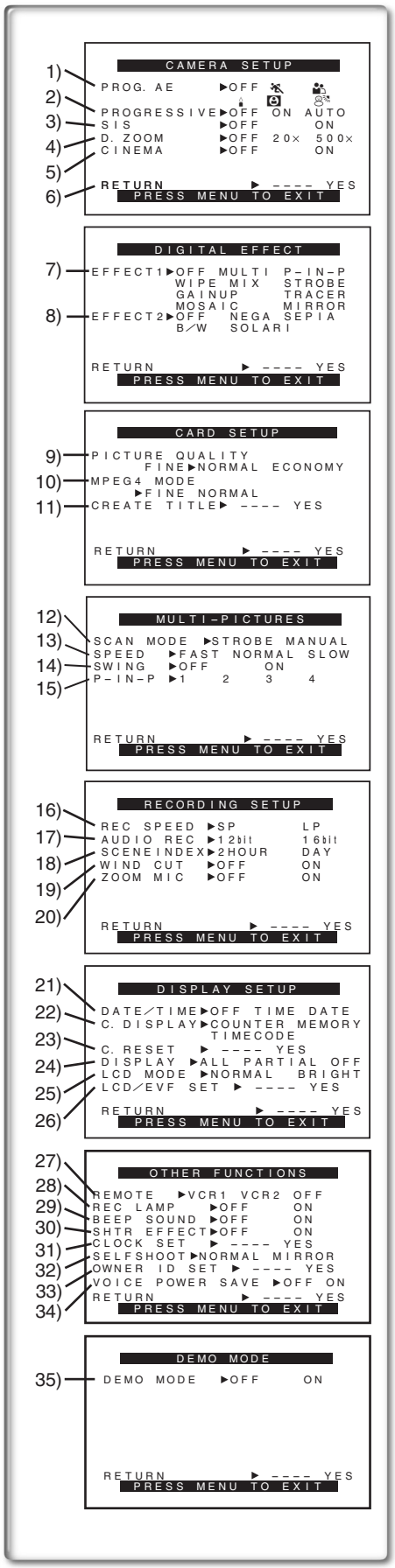
A File Selection Operation may be necessary during Menu Operations. In this case, carry out the following procedure.

1 Turn the [PUSH] Dial and select a file.

- The selected file is marked by a frame ❺.

2 Press the [PUSH] Dial to confirm the selection of the file.

- After the above File Selection Procedure, carry out the various Menu Operations. (The above procedure will not be repeated in the following instructions.)



List of Menus

The figures of the Menus are for explanation purposes only, and they are different from the actual Menus.

Camera Mode Main-Menu [CAMERA FUNCTIONS]

[CAMERA SETUP] Sub-Menu

1) Auto Exposure Mode [PROG.AE] **(➜ 21)**
2) Progressive Photoshot Mode [PROGRESSIVE] **(➜ 18)**
3) Image Stabilizer [SIS] **(➜ 19)**
4) Digital Zoom [D.ZOOM] **(➜ 19)**
5) Cinema-like Format Recording [CINEMA] **(➜ 20)**
6) Returning to the Main-Menu [RETURN]
   - If you set [RETURN] to [YES], the menu changes back to the Main-Menu.

[DIGITAL EFFECT] Sub-Menu

7) Digital Effects 1 [EFFECT1] **(➜ 24)**
8) Digital Effects 2 [EFFECT2] **(➜ 24)**

[CARD SETUP] Sub-Menu (NV-GS4/GS5 only)

9) Picture Quality [PICTURE QUALITY] **(➜ 34)**
10) MPEG4 Picture Quality [MPEG4 MODE] (NV-GS5 only) **(➜ 35)**
11) Title Creation [CREATE TITLE] **(➜ 39)**

[MULTI-PICTURES] Sub-Menu

12) Multi-Picture Mode [SCAN MODE] **(➜ 25)**
13) Strobe Multi-Picture Speed [SPEED] **(➜ 25)**
14) Swing Mode [SWING] **(➜ 25)**
15) Position of Small Picture inside Normal Picture [P-IN-P] **(➜ 25)**

[RECORDING SETUP] Sub-Menu

16) Recording Speed Mode [REC SPEED] **(➜ 16)**
17) Audio Recording Mode [AUDIO REC] **(➜ 16)**
18) Scene Index Mode [SCENEINDEX] **(➜ 28)**
19) Wind Noise Reduction [WIND CUT] **(➜ 21)**
20) Zoom Microphone [ZOOM MIC] **(➜ 18)**

[DISPLAY SETUP] Sub-Menu

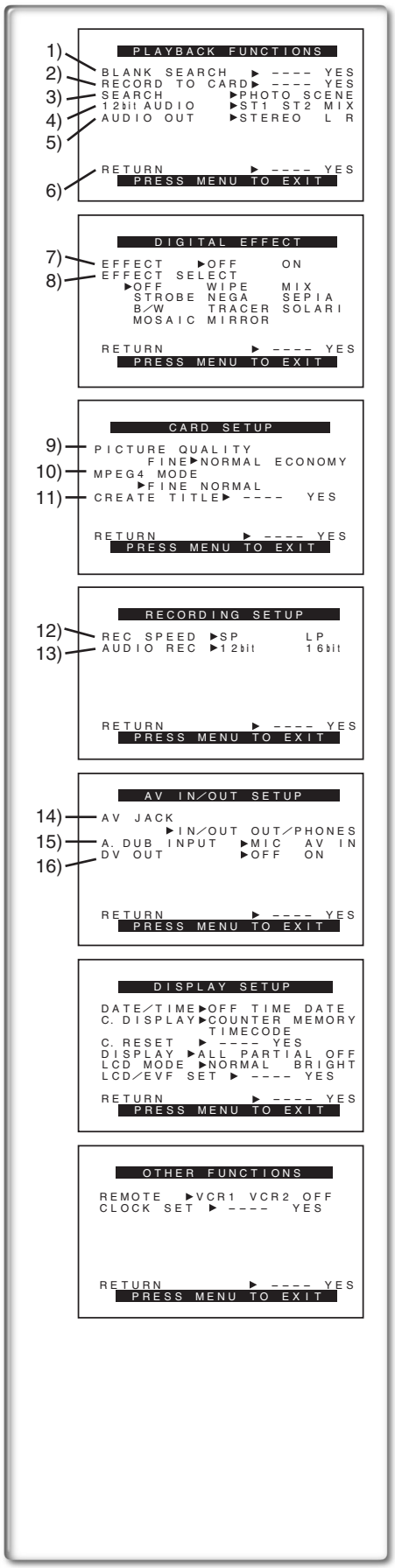
21) Date and Time Indication [DATE/TIME] **(➜ 43)**
22) Counter Display Mode [C.DISPLAY] **(➜ 43)**
23) Counter Reset [C.RESET] **(➜ 52)**
   - It resets the counter to zero. However, it cannot reset the Time Code.
24) Display Mode [DISPLAY] **(➜ 43)**
25) LCD Lighting Mode [LCD MODE] **(➜ 11)**
26) LCD and Viewfinder Adjustment [LCD/EVF SET] **(➜ 11)**

[OTHER FUNCTIONS] Sub-Menu

27) Remote Controller Mode [REMOTE] **(➜ 8)**
28) Recording Lamp [REC LAMP] **(➜ 17)**
29) Beep Sound [BEEP SOUND] **(➜ 44)**
30) Shutter Effect [SHTR EFFECT] **(➜ 18)**
31) Date and Time Setting [CLOCK SET] **(➜ 16)**
32) Self-Recording [SELFSHOOT] **(➜ 17)**
33) Owner ID Set [OWNER ID SET] **(➜ 43)**
34) Voice Power Save [VOICE POWER SAVE] (NV-GS5 only) **(➜ 47)**

[DEMO MODE] Sub-Menu

35) Demonstration Mode [DEMO MODE]
   - If no operation takes place for approximately 10 minutes after the AC Adaptor was connected to the Movie Camera and the [OFF/ON/MODE] Switch was turned to [ON] without inserting a Cassette, the Movie Camera is automatically set to Demonstration Mode for introducing its functions. If any button is pressed or operated, the Demonstration Mode is cancelled. The Demonstration Mode can be started by setting [DEMO MODE] to [ON] and by exiting the Menu. To terminate the Demonstration Mode, insert a Cassette or set the [DEMO MODE] to [OFF].



VCR Mode Main-Menu [VCR FUNCTIONS]

[PLAYBACK FUNCTIONS] Sub-Menu

1) Blank Search [BLANK SEARCH] **(➜ 27)**
2) Recording to Card [RECORD TO CARD] (NV-GS4/GS5 only) **(➜ 34)**
3) Index Search Mode [SEARCH] **(➜ 28)**
4) Audio Selector [12bit AUDIO] **(➜ 30)**
5) Audio Output Mode [AUDIO OUT] **(➜ 45)**
6) Returning to the Main-Menu [RETURN]

[DIGITAL EFFECT] Sub-Menu

7) Digital Effect On/Off [EFFECT] **(➜ 29)**
8) Digital Effect Selection [EFFECT SELECT] **(➜ 29)**

[CARD SETUP] Sub-Menu (NV-GS4/GS5 only)

9) Picture Quality [PICTURE QUALITY] **(➜ 34)**
10) MPEG4 Picture Quality [MPEG4 MODE] (NV-GS5 only) **(➜ 35)**
11) Title Creation [CREATE TITLE] **(➜ 39)**

[RECORDING SETUP] Sub-Menu

12) Recording Speed Mode [REC SPEED] **(➜ 16)**
13) Audio Recording Mode [AUDIO REC] **(➜ 16)**

[AV IN/OUT SETUP] Sub-Menu (NV-GS5 only)

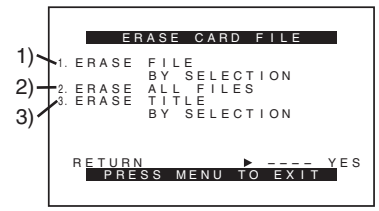
14) AV Socket [AV JACK] **(➜ 30, 31)**
15) Audio Dubbing Input [A.DUB INPUT] **(➜ 30)**
16) Analog-Digital Conversion Output [DV OUT] **(➜ 46)**

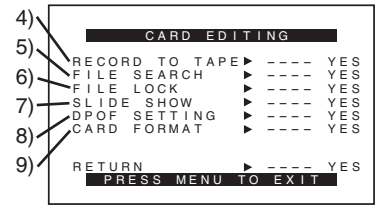
[DISPLAY SETUP] Sub-Menu

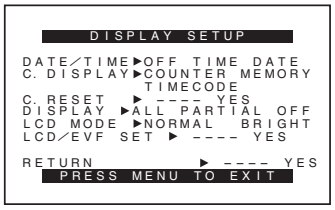
All of the items on the [DISPLAY SETUP] Sub-Menu are the same as those on the [DISPLAY SETUP] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu.

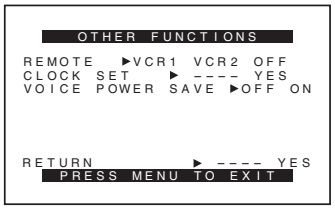
[OTHER FUNCTIONS] Sub-Menu

All of the items on the [OTHER FUNCTIONS] Sub-Menu are the same as those on the [OTHER FUNCTIONS] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu.

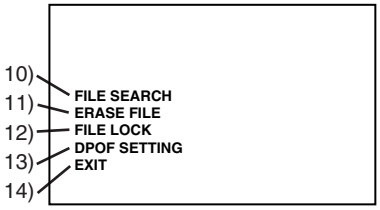



CARD EDITING
RECORD TO TAPE ▶ ---- YES
FILE SEARCH ▶ ---- YES
FILE LOCK ▶ ---- YES
SLIDE SHOW ▶ ---- YES
DPOF SETTING ▶ ---- YES
CARD FORMAT ▶ ---- YES
RETURN ▶ ---- YES
PRESS MENU TO EXIT


DISPLAY SETUP
DATE/TIME ▶OFF TIME DATE
C. DISPLAY ▶COUNTER MEMORY TIMECODE
C. RESET ▶ ---- YES
DISPLAY ▶ALL PARTIAL OFF
LCD MODE ▶NORMAL BRIGHT
LCD/EVF SET ▶ ---- YES
RETURN ▶ ---- YES
PRESS MENU TO EXIT



Ⓐ



Card Playback Mode Main-Menu [CARD FUNCTIONS] (NV-GS4/GS5 only)

[ERASE CARD FILE] Sub-Menu

1) Selecting and Erasing a File [ERASE FILE BY SELECTION] **(➜ 40)**
2) Erasing All Files [ERASE ALL FILES] **(➜ 40)**
3) Selecting and Erasing a Title [ERASE TITLE BY SELECTION] **(➜ 40)**

[CARD EDITING] Sub-Menu

4) Recording to Tape [RECORD TO TAPE] **(➜ 37)**
5) Searching a File [FILE SEARCH] **(➜ 37)**
6) Setting the Lock [FILE LOCK] **(➜ 40)**
7) Setting a Slide Show [SLIDE SHOW] **(➜ 38)**
8) Setting DPOF [DPOF SETTING] **(➜ 41)**
9) Formatting a Card [CARD FORMAT] **(➜ 41)**

[DISPLAY SETUP] Sub-Menu

All of the items on the [DISPLAY SETUP] Sub-Menu are the same as those on the [DISPLAY SETUP] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu.

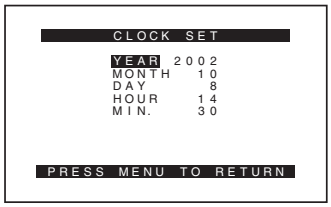
[OTHER FUNCTIONS] Sub-Menu

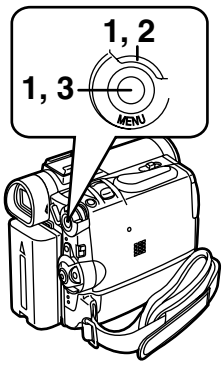
All of the items on the [OTHER FUNCTIONS] Sub-Menu are the same as those on the [OTHER FUNCTIONS] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu.

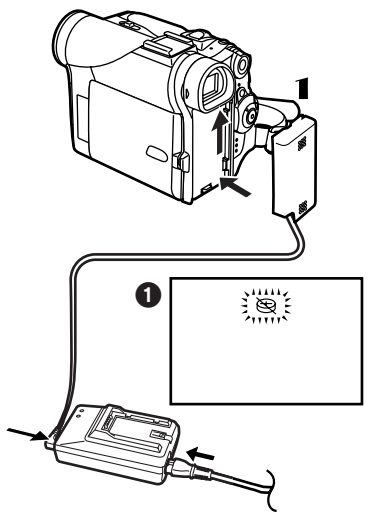
Short-Cut Menus of the Card Playback Mode (NV-GS4/GS5 only) Ⓐ

If you use the Short-Cut Menu, the Card Playback Mode Menu can be called up quickly. Press the [PUSH] Dial to display the Short-Cut Menu, and turn the [PUSH] Dial to select the desired Menu.

10) [FILE SEARCH]:
The [FILE SEARCH] Menu for finding files by number appears. **(➜ 37)**
11) [ERASE FILE]:
The [ERASE FILE] Menu for erasing the file being displayed appears. **(➜ 40)** Use this Menu after the file to be erased appears.
12) [FILE LOCK]:
The [FILE LOCK] Menu for avoiding accidental erasure of files (Lock Setting) being displayed appears. **(➜ 40)** Use this Menu after the file to be locked appears.
13) [DPOF SETTING]:
The [DPOF SETTING] Menu for setting DPOF to the file displayed appears. **(➜ 41)** Use this Menu after the file for DPOF Setting appears.
14) [EXIT]:
It is for terminating the Short-Cut Menu.







Setting Date and Time

Since the internal clock of the Movie Camera has a slight imprecision, make sure to check the time before recording.

1 Set [OTHER FUNCTIONS] >> [CLOCK SET] >> [YES].

2 Press the [PUSH] Dial to select [YEAR]/[MONTH]/[DAY]/[HOUR]/[MIN.] and turn to set it to a desired value.

- Year will cycle in the order shown below.
  2000, 2001, ..., 2089, 2000, ...

3 Press the [MENU] Button to finish setting the date and time.

- The clock operation starts from [00] second.
- The Menu will disappear when the [MENU] Button is pressed again.

- If the built-in battery is weak, the [ ] Indication ❶ flashes. In this case, charge the built-in battery.
- The clock employs the 24-hour system.

Internal Lithium Battery Recharge

The internal lithium battery sustains the operation of the clock. When the [ ] Indication ❶ flashes, the internal lithium battery is near exhaustion.

1 Connect the AC Adaptor to the Movie Camera with the power turned off and then connect to the AC Mains socket.

- After charging for 4 hours, the built-in lithium battery can power the clock for approximately 3 months.

WARNING
THE LITHIUM BATTERY IN THIS EQUIPMENT MUST ONLY BE REPLACED BY QUALIFIED PERSONNEL. WHEN NECESSARY, CONTACT YOUR LOCAL PANASONIC SUPPLIER.

LP Mode

A desired recording speed can be selected with [REC SPEED] on the [RECORDING SETUP] Sub-Menu.

If LP Mode is selected, the recording time becomes 1.5 times longer than that of SP Mode.

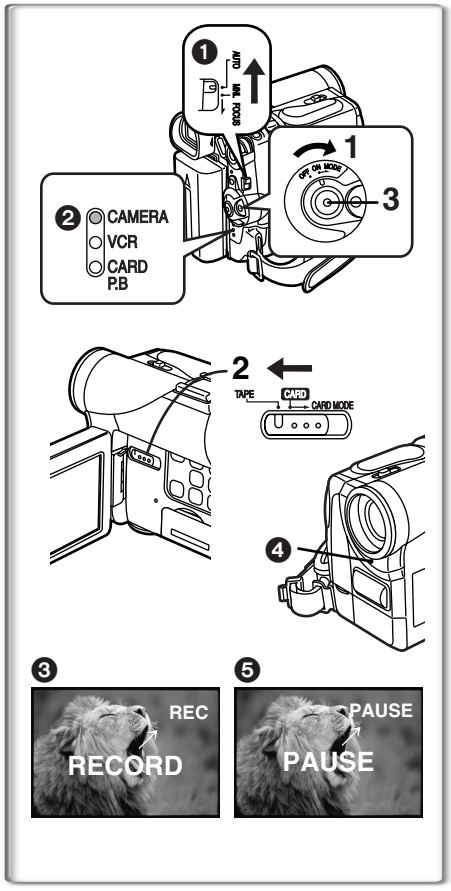
Although the image quality does not decrease with the LP Mode recording, mosaic-pattern noise may appear on a playback image, or some normal functions may be restricted.

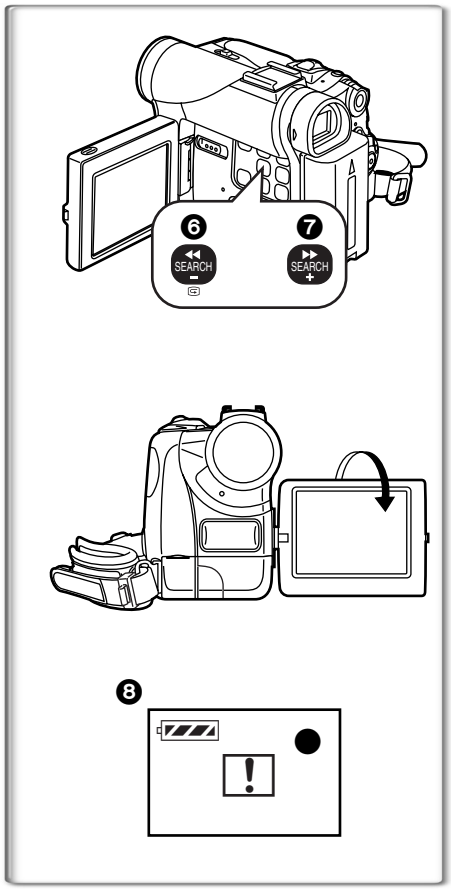
- The contents that are recorded in LP Mode are not completely compatible with other equipment.
- Audio dubbing is not possible with LP Mode. **(➜ 30)**

Audio Recording Mode

The sound quality of the recorded sound can be selected with [AUDIO REC] on the [RECORDING SETUP] Sub-Menu.

High sound-quality recording is possible with “16 bit 48 kHz 2 track” Mode. With the “12 bit 32 kHz 4 track” Mode, the original sound can be recorded on 2 tracks in stereo, while the other 2 tracks can be used for Audio Dubbing.





CAMERA Mode

Recording

When recording with the Mode Selector Switch ❶ set to [AUTO], the Movie Camera automatically adjust the focus and white balance. In some cases, they cannot be adjusted automatically and need to be adjusted manually.
(➜ 22, 23)

1 Set the [OFF/ON/MODE] Switch to [ON].
- The [CAMERA] Lamp lights up. ❷

2 Set the [TAPE/CARD/CARD MODE] Selector to [TAPE]. (NV-GS4/GS5 only)

3 Press the Recording Start/Stop Button.
- Recording starts.
- After the [RECORD] is displayed, it changes to [REC]. ❸

■Recording Lamp (Tally Lamp) ❹

The Recording Lamp lights up during recording and alerts those being recorded that recording is in progress.
- The Recording Lamp does not light up if the [REC LAMP] on the [OTHER FUNCTIONS] Sub-Menu is set to [OFF].

■To Pause the Recording

Press the Recording Start/Stop Button again.
The [PAUSE] Indication is displayed. ❺
- If the Recording Pause Mode continues for more than 6 minutes, the power is turned off automatically for tape protection and power conservation. To resume recording from this condition, turn off, then turn on the power again.

■To Check the Recording

By pressing the [⟲] Button ❻ briefly in the Recording Pause Mode, you can play back the last few seconds of the recorded scene.
- The [CHK] Indication is displayed. After checking, the Movie Camera resumes the Recording Pause Mode.

■To View the Recorded Scene while the Recording Is Paused (Camera Search)

The recorded scene can be viewed by keep pressing the [SEARCH−] Button ❻ or [SEARCH+] Button ❼ in the Recording Pause Mode.
- When the [SEARCH−] Button is pressed, images are played back in the reverse direction.
- When the [SEARCH+] Button is pressed, images are played back in the forward direction.

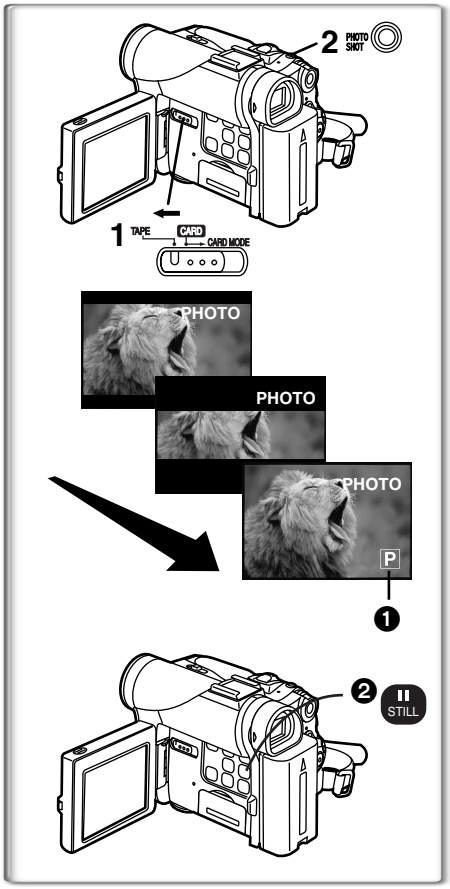
■Recording Yourself

By opening the LCD Monitor and rotating it frontward (to the lens side), you can let the subject in front of the Movie Camera monitor the shot while recording is in progress.
- When the LCD Monitor is opened, the Viewfinder is disabled automatically. However, when the LCD Monitor is rotated frontward, the image is also shown in the Viewfinder.
- If you prefer to have the image on the LCD Monitor to look like an image in a mirror, set [SELFSHOOT] on the [OTHER FUNCTIONS] Sub-Menu to [MIRROR].
  Images are recorded normally and no left and right reversal occurs.
- If [MIRROR] is used during self-recording, only the basic indications, such as the Recording Indication [ ] (Red) or [●], Recording Pause Indication [ ] (Cyan) or [●❚❚] and Remaining Battery Power Indication [▰▰▰], are displayed. ❽
- If a general Warning/Alarm Indication [!] appears, return the LCD Monitor to the original position in order to check the specific content of the Warning/Alarm Indication.

■To Finish the Recording

Set the [OFF/ON/MODE] Switch to [OFF].

- For other notes concerning this item, see page 44.



Photoshot

This Movie Camera can take approximately 7 seconds still pictures containing sound.

1 Set the [TAPE/CARD/CARD MODE] Selector to [TAPE]. (NV-GS4/GS5 only)

2 Press the [PHOTO SHOT] Button in the Recording Pause Mode.

- The Movie Camera records a still picture for about 7 seconds and then switches back to the Recording Pause Mode.

■Progressive Photoshot

With the Progressive Photoshot Function, you can record still pictures with higher resolution than with the normal Photoshot Function.

- When [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON] or [AUTO], the [P] Indication ❶ is displayed. When the [P] Indication is displayed, press the [PHOTO SHOT] Button in the Recording Pause Mode.
- This function may not work with some function setups.

■Continuous Photoshot

If you set [SHTR EFFECT] on the [OTHER FUNCTIONS] Sub-Menu to [ON] and keep the [PHOTO SHOT] Button pressed, the Movie Camera will continuously record still pictures in approximately 0.7 seconds intervals until the button is released. (However, this does not operate when using Progressive Photoshot.)

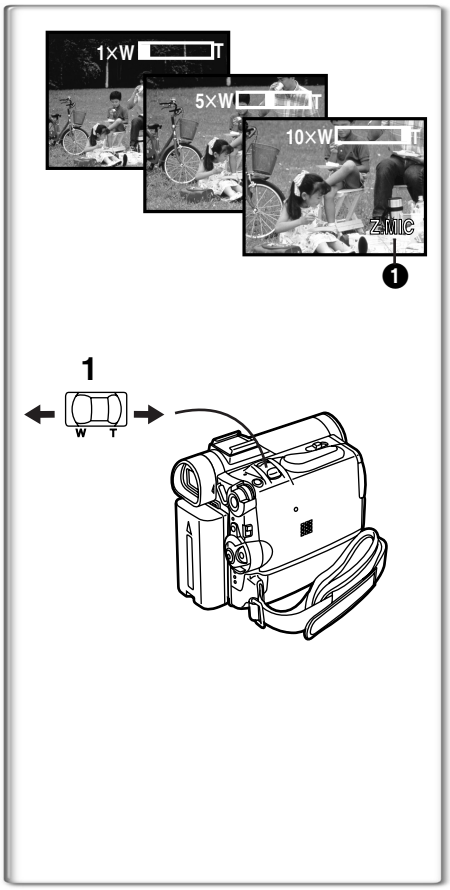
- The screen blinks and, at the same time, a shutter clicking sound is recorded.

■Digital Still Picture

When the [STILL] Button ❷ is pressed, images become still pictures. When the button is pressed again, the Digital Still Picture Mode is cancelled.

- We recommend that you press the [STILL] Button first at the position where you wish to record the picture so as to enter the Digital Still Picture Mode and then press the [PHOTO SHOT] Button.

- For other notes concerning this item, see page 44.



Zoom In/Out Functions

It gives special effects to the video by recording objects close by or with wide-angle shot.

1 For wide-angle shots (zoom out):
Push the [W/T] Zoom Lever towards [W].
For close-ups (zoom in):
Push the [W/T] Zoom Lever towards [T].

- Zoom Magnification Indication is displayed for a few seconds.

To Take Close-up Shots of Small Subjects

(Macro Close-up Function)

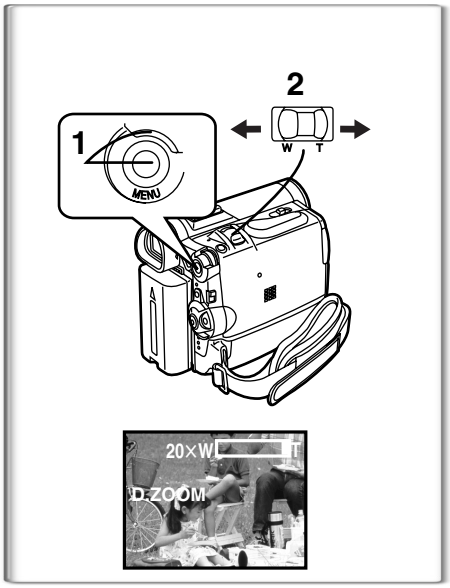
When the zoom magnification is 1×, the Movie Camera can focus on a subject that is as close as approximately 20 mm from the Lens. With this, small subjects like insects can be recorded.

To Use the Zoom Microphone Function

Along with the zooming operation, the microphone's directional angle and sensitivity are varied for recording sounds.

- Set [ZOOM MIC] on the [RECORDING SETUP] Sub-Menu to [ON]. (The [Z.MIC] Indication is displayed. ❶)
- The Zoom Microphone Function may not work effectively if the surrounding noise is too loud.

- For other notes concerning this item, see page 44.



Digital Zoom Function

This function is useful when you want to record close-up shots of subjects located beyond a normal zoom range of 1× to 10× magnification. With the Digital Zoom Function, you can select a magnification of 20× or even to 500×.

1 Set [CAMERA FUNCTIONS] >> [CAMERA SETUP] >> [D.ZOOM] >> [20×] or [500×].

- 20×: Digital zooming to 20×
- 500×: Digital zooming to 500×

2 Push the [W/T] Zoom Lever towards [W] or towards [T] to zoom in or out.

To Cancel the Digital Zoom Function

Set [D.ZOOM] on the [CAMERA SETUP] Sub-Menu to [OFF].

- As the magnification of digital zoom increases, the quality of image may deteriorate.
- White balance cannot be set in the digital zoom range.

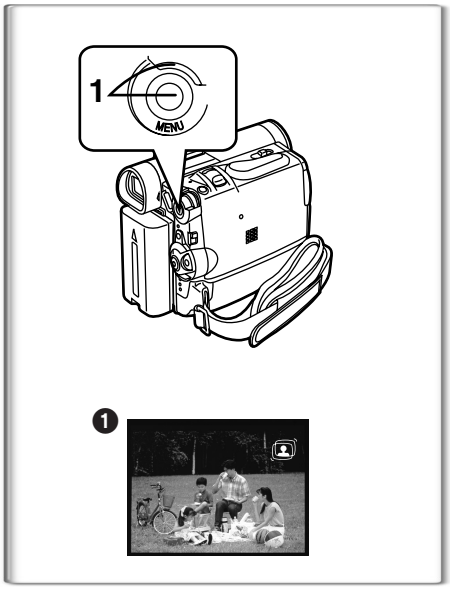


Image Stabilizer Function

If the Movie Camera might be shaken while recording, the camera shake in the image can be corrected.

- If the Movie Camera shakes too much, this function may not be able to stabilize images.

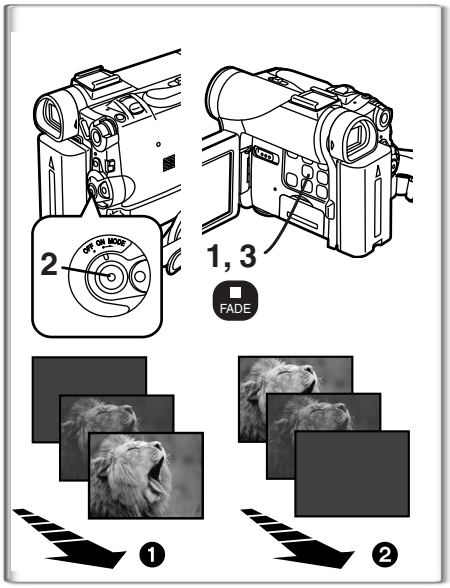
1 Set [CAMERA FUNCTIONS] >> [CAMERA SETUP] >> [SIS] >> [ON].

- The [ ] Indication ❶ appears.

To Cancel Image Stabilizer

Set [SIS] on the [CAMERA SETUP] Sub-Menu to [OFF].

- For other notes concerning this item, see page 44.



Fade In/Out Functions

Fade In ❶

Fade In brings out images and sounds gradually from a black screen at the beginning of a scene.

1 Keep pressing the [FADE] Button during the Recording Pause Mode.

- The image fades out gradually.

2 When the image is completely gone, press the Recording Start/Stop Button to start recording.

3 Release the [FADE] Button about 3 seconds after starting recording.

- The image reappears gradually.

Fade Out ❷

Fade Out causes images and sounds to disappear gradually, leaving a black screen at the end of a scene.

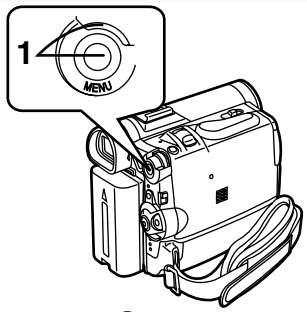
1 Keep pressing the [FADE] Button while recording.

- The image fades out gradually.

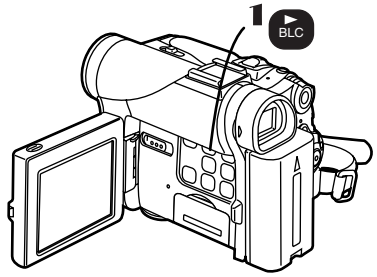
2 When the image is completely gone, press the Recording Start/Stop Button to stop recording.

3 Release the [FADE] Button.

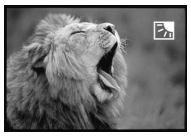
- The still picture cannot fade in or fade out.

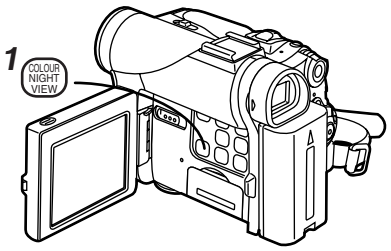


❶

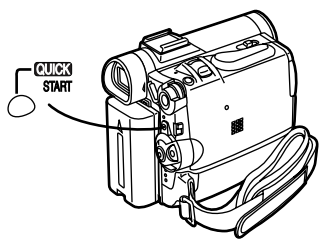


❷





❸



Cinema Function

This function is for recording in a cinema-like wide screen.

1 Set [CAMERA FUNCTIONS] >> [CAMERA SETUP] >> [CINEMA] >> [ON].

- Black bars appear at the top and bottom of the screen. ❶

To Cancel the Cinema Mode

Set [CAMERA FUNCTIONS] >> [CAMERA SETUP] >> [CINEMA] >> [OFF].

- For other notes concerning this item, see page 44.

Backlight Compensation Function

This prevents a recording subject from being recorded darker in backlight. (Backlight is the light that shines from behind a recording subject.)

1 Press the [BLC] Button.

- The [BLC] Indication ❷ flashes and then is displayed.

To Resume Normal Recording

Press the [BLC] Button.

- When the [BLC] Button is pressed, the entire screen becomes brighter.
- By operating the [OFF/ON/MODE] Switch, the Backlight Compensation Function is cancelled.
- For other notes concerning this item, see page 44.

Colour Night View Function

Objects can be brightly isolated from backgrounds with a luminance of 1 lux (where the shutter speed is set to 1/2 second).

***1* Press the [COLOUR NIGHT VIEW] Button.**

- The [C.NIGHT VIEW] Indication ❸ appears.
- In a bright place, the mode temporarily reverts to the normal recording mode.
- The recorded picture is presented in a time-lapse-like manner.
- Focusing must be adjusted manually.
- Use this function only in situations where there is limited light. Do not use it in brightly lit places or aim at the sun. Otherwise, the Movie Camera will be seriously damaged.
- The Progressive Photoshot Function is automatically turned off.
- The Continuous Photoshot Function cannot be used.
- White Balance cannot be set.
- The electronic shutter cannot be adjusted.
- The Program AE or Digital Effect Modes in EFFECT1 cannot be set.
- The Image Stabilizer does not function.
- When recording with the Colour Night View Function, it is recommended to use the tripod.

Quick Start

Press the [QUICK START], and the Movie Camera will be ready for shooting in approximately 1.5 seconds after the power is turned on.

When the Movie Camera is left in the pause status in shooting for 6 minutes, it will be turned into the standby status of the Quick Start. To turn the power on again, turn the power switch off and then turn it on again.

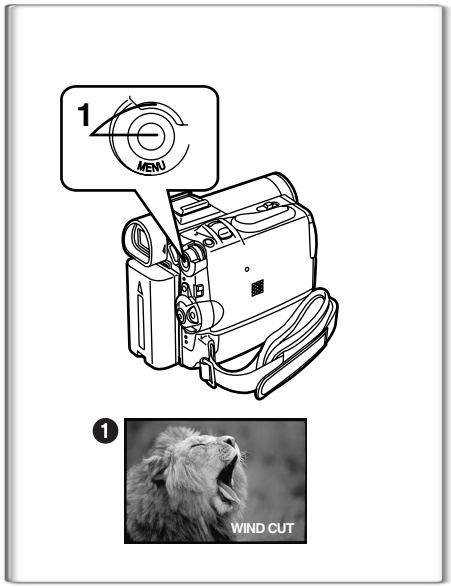
However, this function is not activated in the following cases even if the Quick Start Recording Lamp lights:

- A tape is not inserted, while the tape mode is set.
- A Card is not inserted, while the Card mode is set.

If the [QUICK START] Button is pressed and held for approximately two seconds when the Quick Start Recording Lamp lights, the lamp will go off and the power will completely be turned off.

If the Movie Camera is not operated for approximately 30 minutes when the Quick Start Recording Lamp lights, the lamp will go off and the power will completely be turned off.

- If the battery is replaced, etc. in the state of Quick Start ON, the Quick Start lamp will light when the power is turned ON.
- During the Automatic White Balance Mode, the colour may be recorded unnaturally at the beginning of the recording.
- The zoom magnification differs from when it is in the standby status and when the recording starts.



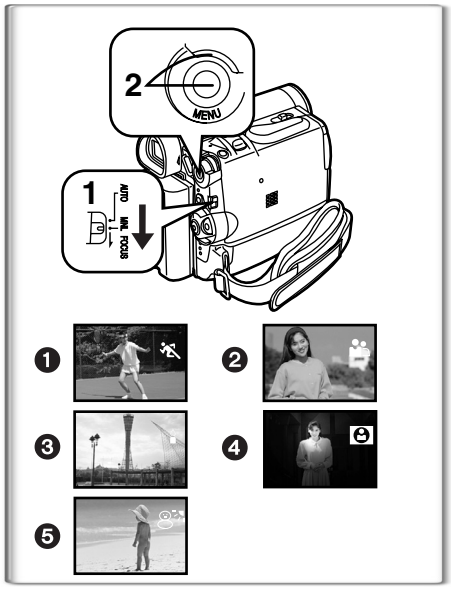
Wind Noise Reduction Function

This function reduces the sound of a wind hitting the microphone when recording.

1 Set [CAMERA FUNCTIONS] >> [RECORDING SETUP] >> [WIND CUT] >> [ON].

- The [WIND CUT] Indication ❶ appears.

- For other notes concerning this item, see page 44.



Recording in Special Situations

(Programme AE)

You can select optimal automatic exposures under specific recording situations.

1 Set the Mode Selector Switch to [MNL].

- The [MNL] Indication appears.

2 Set [CAMERA FUNCTIONS] >> [CAMERA SETUP] >> [PROG.AE] >> a desired mode ([ ], [ ], [ ], [ ] or [ ]).

- The Indication of the selected Mode appears.

[ ] Sports Mode ❶

For recording scenes involving quick movements, such as sports scenes.

[ ] Portrait Mode ❷

For bringing up people clearly from the background.

[ ] Low Light Mode ❸

For recording a dark scene brighter.

[ ] Spotlight Mode ❹

For recording a subject under spotlight in a party, theatre, etc.

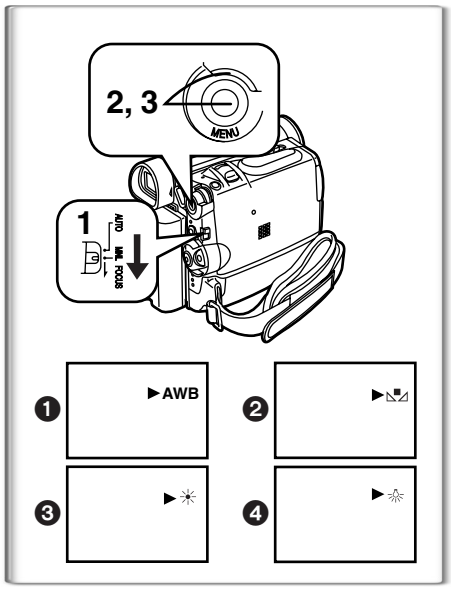
[ ] Surf & Snow Mode ❺

For recording in a glaring surrounding, such as skiing grounds, beaches, etc.

To Cancel the Programme AE Function

Set the Mode Selector Switch to [AUTO]. Or, set the [PROG.AE] on the [CAMERA SETUP] Sub-menu to [OFF].

- For other notes concerning this item, see page 44.



Recording in Natural Colours

(White Balance)

Depending on the scene or light condition, the Automatic White Balance Adjustment Mode may not be able to bring out natural colours. **(➜ 22)** In such a case, the white balance can be adjusted manually.

When power is turned on with the Lens Cap on, the Automatic White Balance Adjustment may not function properly. Please turn on the Movie Camera after removing the Lens Cap.

1 Set the Mode Selector Switch to [MNL].

- The [MNL] Indication appears.

2 Press the [PUSH] Dial.

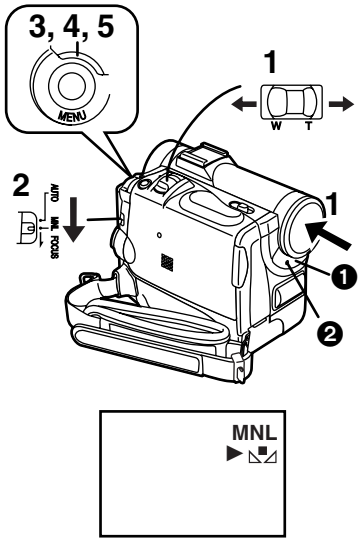
- The [AWB] Indication appears.

3 Turn the [PUSH] Dial to set a desired White Balance Mode.

❶ Automatic White Balance Adjustment [AWB]
❷ The white balance setting that was previously set manually [ ]
❸ Outdoor Mode [ ]
❹ Indoor Mode (recording under incandescent lamp) [ ]

To Resume Automatic Adjustment

Turn the [PUSH] Dial until the [AWB] Indication appears. Or, set the Mode Selector Switch to [AUTO].



Adjusting White Balance Manually

White Balance Adjustment recognizes the colour of light and makes adjustment so that the white colour will become pure white. The Movie Camera determines the hue of light that it receives through the Lens and White Balance Sensor **(➜ 6),** thereby judging the recording condition, and selects the closest hue setting. This function is called Automatic White Balance Adjustment.

For light outside the functional Auto White Balance Adjustment range, use the Manual White Balance Adjustment Mode.

1 Attach the Lens Cap and zoom in until the entire screen becomes white.

2 Set the Mode Selector Switch to [MNL].

- The [MNL] Indication appears.

3 Press the [PUSH] Dial.

- The [AWB] Indication appears.

4 Turn the [PUSH] Dial until the [▪◿] Indication is displayed.

5 Keep pressing [PUSH] Dial until the [▪◿] Indication stops flashing.

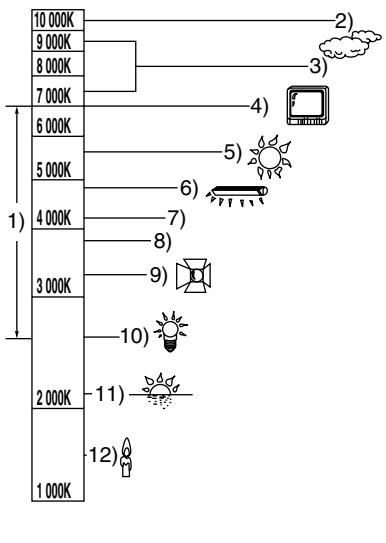
To Resume Automatic Adjustment

Turn the [PUSH] Dial until the [AWB] Indication is displayed. Or, set the Mode Selector Switch to [AUTO].

■ About White Balance Sensor

The White Balance Sensor ❶ determines the nature of the light source during recording.

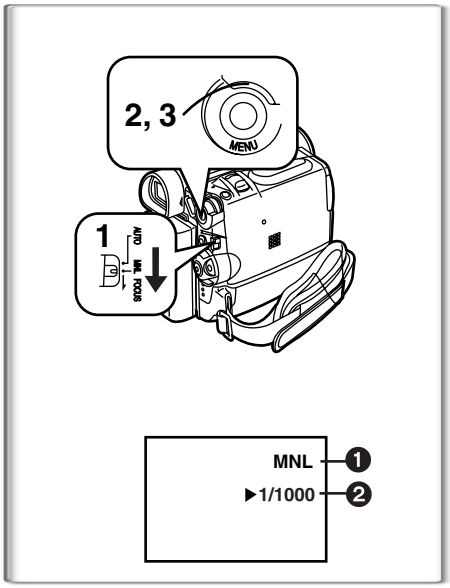
- Do not cover the White Balance Sensor with your hand during recording. Otherwise, White Balance will not function normally.
- The red light from the Tally Lamp ❷ will be reflected off your hand or object, possibly causing the White Balance sensor to operate incorrectly and changing the colouring.



Outside of the effective range of Automatic White Balance Adjustment, the image will become reddish or bluish. Even within the effective range of Automatic White Balance Adjustment, the Automatic White Balance Adjustment may not function properly if there is more than one light source. In this case, adjust the White Balance.

1) The effective range of Automatic White Balance Adjustment on this Movie Camera
2) Blue sky
3) Cloudy sky (Rain)
4) TV screen
5) Sunlight
6) White fluorescent lamp
7) 2 hours after sunrise or before sunset
8) 1 hour after sunrise or before sunset
9) Halogen light bulb
10) Incandescent light bulb
11) Sunrise or sunset
12) Candlelight

- For other notes concerning this item, see page 45.



Manual Shutter Speed Adjustment

It is useful for recording fast-moving subjects.

1 Set the Mode Selector Switch to [MNL].

- The [MNL] Indication ❶ appears.

2 Press the [PUSH] Dial until the Shutter Speed Indication ❷ appears.

3 Turn the [PUSH] Dial to adjust the shutter speed.

Range of Shutter Speed Adjustment

1/50–1/8000 s

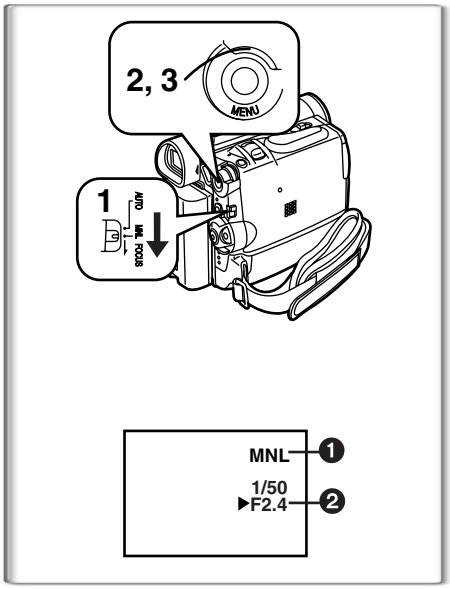
The standard shutter speed is 1/50 s.

Selecting a speed closer to [1/8000] causes the shutter speed to be faster.

To Resume Automatic Adjustment

Set the Mode Selector Switch to [AUTO].

- For other notes concerning this item, see page 45.



Manual Iris Adjustment

(F Number)

You can use this function when the screen is too bright or too dark.

1 Set the Mode Selector Switch to [MNL].

- The [MNL] Indication ❶ appears.

2 Press the [PUSH] Dial until the Iris Indication ❷ appears.

3 Turn the [PUSH] Dial to adjust the iris.

Range of Iris Adjustment

CLOSE (Closed), F16, ..., F2.0,

OP (Opened)+0dB, ..., OP+18dB

When the Gain-up Mode [GAINUP] **(➔ 24)** is used, Iris adjustment is by OP+15dB.

When a value closer to [CLOSE] is selected, the image becomes darker.

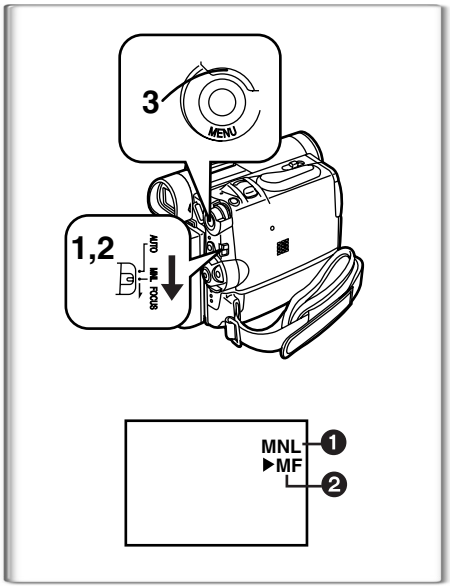
When a value closer to [OP+18dB] is selected, the image becomes brighter.

The value to which +dB is attached indicates a Gain-up value. If this value is too large, the quality of the image deteriorates.

To Resume Automatic Adjustment

Set the Mode Selector Switch to [AUTO].

- For other notes concerning this item, see page 45.



Manual Focus Adjustment

Focus can be adjusted manually for recording in a situation where auto focus may not function well.

1 Set the Mode Selector Switch to [MNL].

- The [MNL] Indication ❶ appears.

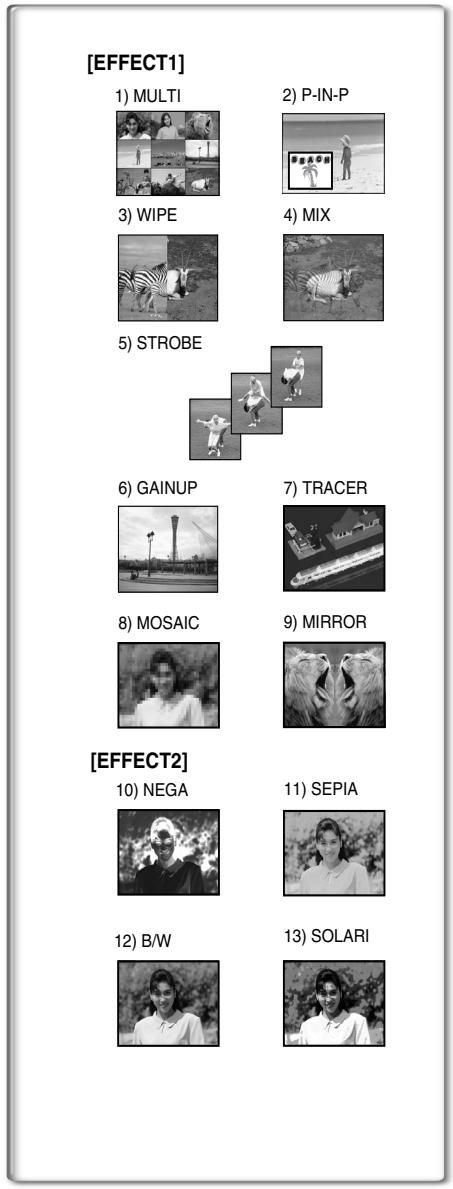
2 Slide the Mode Selector Switch to [FOCUS].

- The [▶MF] Indication (Manual Focus Mode) ❷ appears.

3 Turn the [PUSH] Dial to adjust the focus.

To Resume Automatic Adjustment

Set the Mode Selector Switch to [AUTO].



Digital Effect Functions

This Movie Camera is equipped with Digital Effect Functions that add special effects to the scene.

Digital Effects 1 [EFFECT1]

1) Multi Mode [MULTI]
2) Picture-In-Picture Mode [P-IN-P]
3) Wipe Mode [WIPE] **(➜ 24)**
4) Mix Mode [MIX] **(➜ 24)**
5) Strobe Mode [STROBE]
   - ●It records images with a stroboscopic effect.
6) Gain-up Mode [GAINUP] **(➜ 23)**
   - ●It brightens images electronically.
   - ●Adjust focus manually when using this mode.
7) Trailing Effect Mode [TRACER]
   - ●It records images with a trailing effect.
8) Mosaic Mode [MOSAIC]
   - ●It produces a mosaic-like image.
9) Mirror Mode [MIRROR]
   - ●The right half of an image becomes a mirror image of the left half.

Digital Effects 2 [EFFECT2]

10) Negative Mode [NEGA]
    - ●The colours of the recorded image are inverted as seen in a negative.
11) Sepia Mode [SEPIA]
    - ●It records a scene with a brownish tint, like the colour of old pictures.
12) Black & White Mode [B/W]
    - ●It records an image in black and white.
13) Solarisation Mode [SOLARI]
    - ●It records an image with a painting-like effect.

To Select a Desired Digital Effect

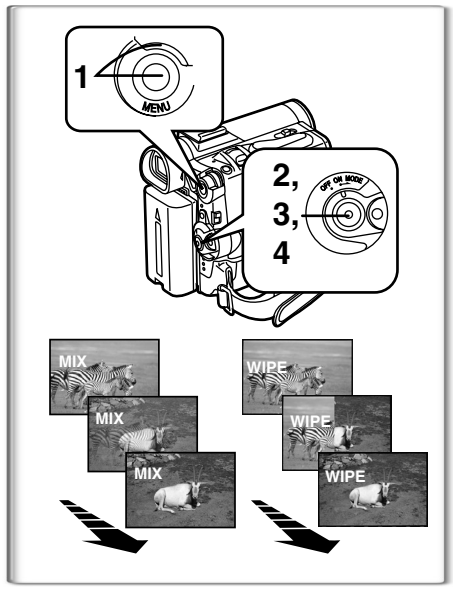
Set [CAMERA FUNCTIONS] >> [DIGITAL EFFECT] >> [EFFECT1] or [EFFECT2] >> a desired Digital Effect.

To Cancel the Digital Effect

Set [CAMERA FUNCTIONS] >> [DIGITAL EFFECT] >> [EFFECT1] or [EFFECT2] >> [OFF].

- ●If the Movie Camera is turned off, the [EFFECT2] settings are cancelled.

●For other notes concerning this item, see page 45.



■Wipe Mode and Mix Mode

Wipe Mode:

Like a curtain is being pulled, the still picture of the last recorded scene gradually changes to the moving image of a new scene.

Mix Mode:

While the moving image of a new scene fades in, the still image of the last recorded scene gradually fades out.

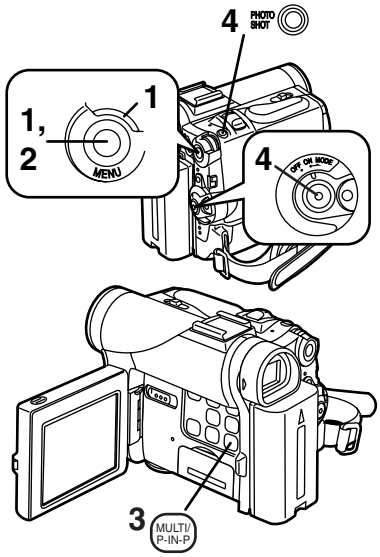
1 Set [CAMERA FUNCTIONS] >>[DIGITAL EFFECT] >> [EFFECT1] >> [WIPE] or [MIX].
- ●The [WIPE] or [MIX] Indication appears.

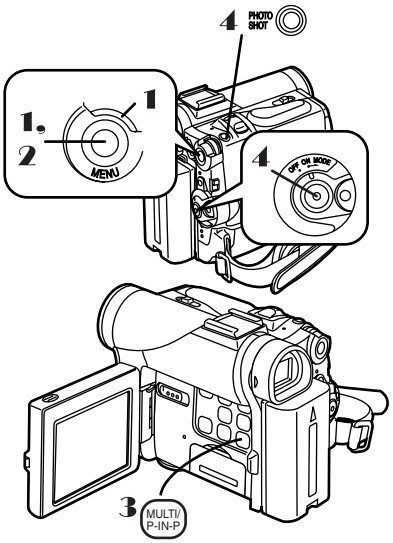
2 Press the Recording Start/Stop Button to start recording.

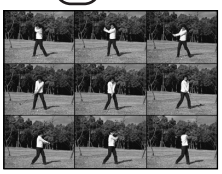
3 Press the Recording Start/Stop Button to pause the recording.
- ●The last scene is stored in memory. The [WIPE] or [MIX] Indication changes to [WIPE] or [MIX].

4 Press the Recording Start/Stop Button to restart the recording.
- ●The last image of the previous scene gradually changes to the new scene.

●For other notes concerning this item, see page 45.







■Picture-in-Picture Mode

You can display a sub-screen (still picture) inside the screen.

1 Set [CAMERA FUNCTIONS] >> [DIGITAL EFFECT] >> [EFFECT1] >> [P-IN-P].

2 Set [CAMERA FUNCTIONS] >> [MULTI-PICTURES] >> [P-IN-P] >> a position (❶❷❸❹) where you want to insert a small still picture.

3 Aim the Movie Camera at the scene you want to capture and press the [P-IN-P] Button to insert a small still picture.

- A small still picture is displayed in a normal picture.
- If the [P-IN-P] Button is pressed again, the small still picture is cleared.

4 Press the Recording Start/Stop Button or the [PHOTO SHOT] Button to record on the Cassette.

- For other notes concerning this item, see page 45.

■Multi-Picture Mode

Strobe Multi-Picture Mode ❺:
You can capture and record 9 consecutive small still pictures.
Manual Multi-Picture Mode ❻:
You can manually capture and record 9 small still pictures.

1 Set [CAMERA FUNCTIONS] >> [DIGITAL EFFECT] >> [EFFECT1] >> [MULTI].

2 Set [CAMERA FUNCTIONS] >> [MULTI-PICTURES] >> [SCAN MODE] >> [STROBE] or [MANUAL].

When [STROBE] is selected:

- Set the [SPEED] to a desired strobe speed. At the [FAST] setting, 9 consecutive still pictures is captured within approximately 1 second, at [NORMAL] within approximately 2 seconds, and at [SLOW] within approximately 3 seconds.
- If you set [SWING] to [ON], the intervals at which the 9 still pictures are taken are longer at the beginning and end than in the middle of the swing strobe period, and it is useful for analyzing swing motion, etc. in sports.

When [MANUAL] is selected:

- You can select a desired scene one at a time up to 9 small pictures.

3 Press the [MULTI] Button.

- If [MANUAL] is selected, press the [MULTI] Button at each scene you want to capture.

4 Press the Recording Start/Stop Button or the [PHOTO SHOT] Button to record on the Cassette.

Deleting All the Captured Multi-Pictures

While 9 multi-pictures are displayed, press the [MULTI] Button.

- If [MANUAL] has been selected, press the [MULTI] Button after 9 pictures are displayed.

To Display the Multi-Pictures again

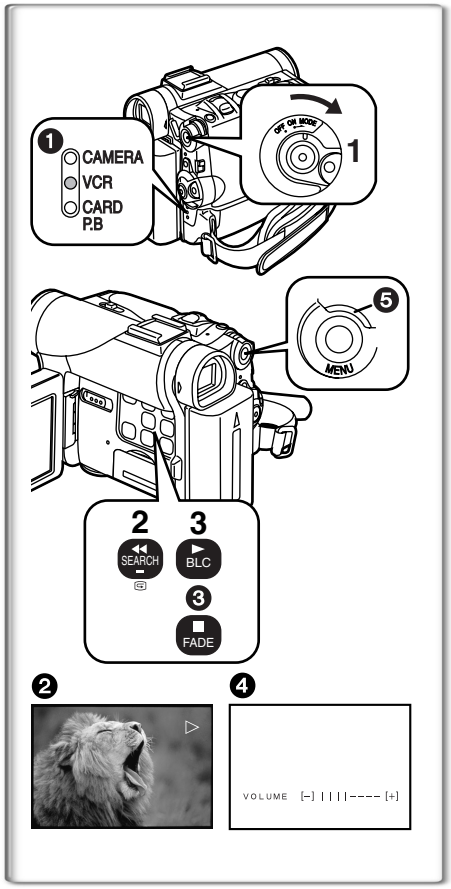
Press the [MULTI] Button for 1 second or longer.

To Delete Multi-Pictures One by One (When pictures were captured in [MANUAL])

When the [MULTI] Button is pressed for 1 second or longer while the still pictures are displayed, the pictures captured last is deleted continuously.

- After still pictures are deleted one by one, they cannot be displayed again.

- For other notes concerning this item, see page 45.



VCR Mode

Playing Back

The recorded scene can be played back immediately after the recording.

1 Rotate the [OFF/ON/MODE] Switch and set the Movie Camera to the VCR Mode.

- The [VCR] Lamp lights up. ❶

2 Press the [◄◄] Button to rewind the tape.

- Rewind the tape to the point where you want to start playback.
- When the tape reaches the beginning, rewinding stops automatically.

3 Press the [►] Button to start playback.

- The [▷] Indication ❷ appears.

To Stop Playback

Press the [■] Button ❸.

■Adjusting the Sound Volume

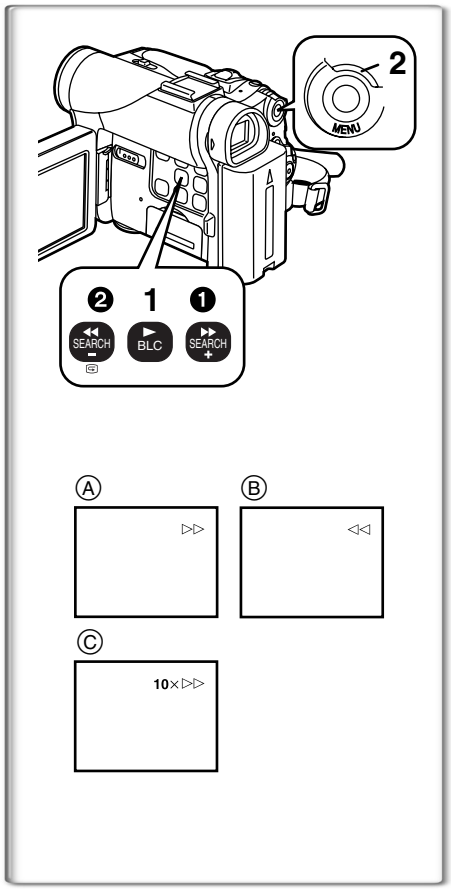
Until the [VOLUME] Indication ❹ appears, keep pressing the [PUSH] Dial ❺. Then, turn the [PUSH] Dial to adjust the volume. After the adjustment, press the [PUSH] Dial to make the [VOLUME] Indication disappear.

To adjust the volume with the Remote Controller, press the [T] or [W] Button to display the [VOLUME] Indication. Press the [T] Button to increase the volume or press the [W] Button to decrease the volume. The [VOLUME] Indication goes off a few seconds after the adjustment is finished.

- The sound volume cannot be adjusted using the Remote Controller in Playback Zoom Mode. **(➜ 28)**

- If a cassette recorded with a copyright protection signal is played back, the picture is distorted by mosaic-like patterns.

- For other notes concerning this item, see page 45.



Finding a Scene You Want to Play Back

■Cue/Review Playback

If the [►►] Button ❶ or [◄◄] Button ❷ is pressed during Playback, it turns to Cue Playback Ⓐ or Review Playback Ⓑ.

- If the Button is held continuously, it turns to Cue Playback or Review Playback until you release it.

■Variable Speed Search Function Ⓒ

The speed of Cue Playback or Review Playback can be varied.

1 During playback, press the [►] Button.

- The [1×▷] Indication appears.

2 Turn the [PUSH] Dial to select a desired search speed.

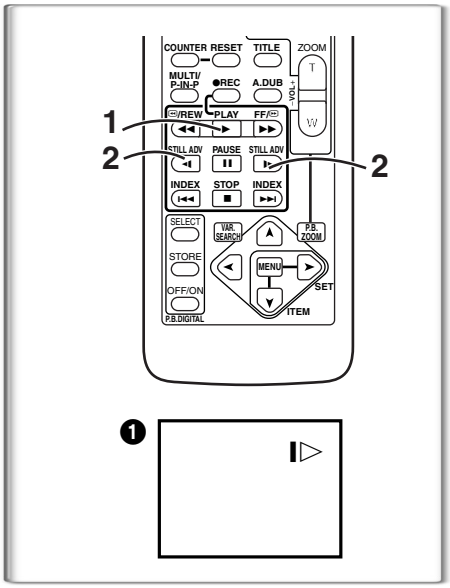
The following 6 playback speeds are available for the Variable Speed Search Function in both the fast-forwarding and rewinding directions:

1/5× (slow playback in SP Mode only), 1/3× (slow playback in LP Mode only), 1×, 2×, 5×, 10× and 20×.

To Resume Normal Playback

Press the [►] Button.

- During Cue or Review Playback, fast-moving images may show mosaic-pattern noise.
- The sound is muted during search.



Slow Motion Playback

This Movie Camera can play back at a slow speed.

1 Press the [▶] Button.

2 Press the [◂I] Button or [I▸] Button on the Remote Controller.

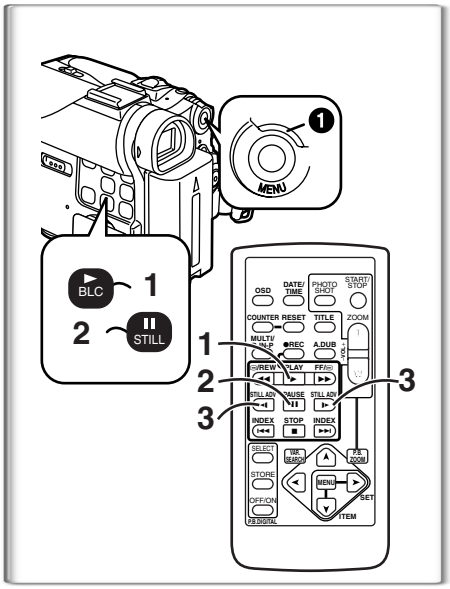
- The [I▷] or [◁I] Indication ❶ appears.
- When the [◂I] Button is pressed, Slow Motion Playback proceeds in the reverse direction. When the [I▸] Button is pressed, Slow Motion Playback proceeds in the forward direction.

Scenes recorded in the SP Mode are played back at approximately 1/5th of the normal speed.

Scenes recorded in the LP Mode are played back at approximately 1/3rd of the normal speed.

To Resume Normal Playback

Press the [▶] Button.



Still Playback/Still Advance Playback

This Movie Camera is capable of still picture playback and frame-advance playback.

1 Press the [▶] Button.

2 Press the [❚❚] Button.

- The playback image stops in the Still Playback Mode.

3 Press the [◂I] Button or [I▸] Button on the Remote Controller.

- With each pressing of the [◂I] Button, still pictures advance in the reverse direction. With each pressing of the [I▸] Button, still pictures advances in the forward direction. If either one of the buttons continues to be pressed, still pictures advance continuously 1 frame at a time until the button is released.

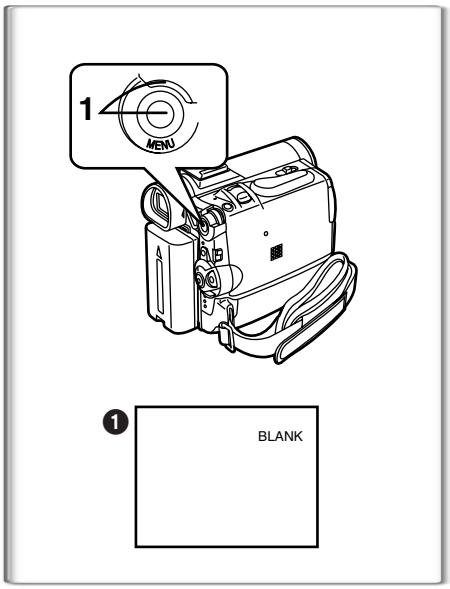
To Resume Normal Playback

Press the [▶] Button.

■Jog Playback

By turning the Jog Dial ([PUSH] Dial) ❶ of the Movie Camera in the Still Playback Mode, still pictures can be advanced one frame at a time in the forward or backward direction.

- If the Movie Camera is left in the Still Playback Mode for more than 6 minutes, the Movie Camera switches to the Stop Mode to protect the video heads from excessive wear and tear.



Finding the End of Recording

(Blank Search Function)

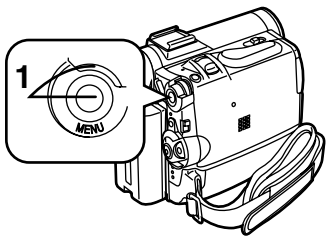
The Blank Search Function aids you locate the end of the recording on the Cassette quickly.

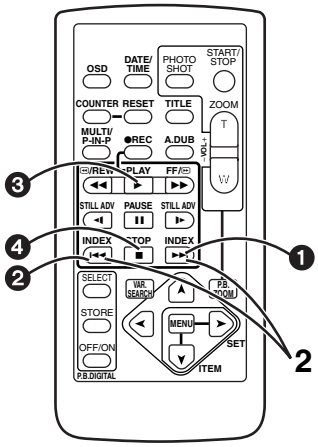
1 Set [VCR FUNCTIONS] >> [PLAYBACK FUNCTIONS] >> [BLANK SEARCH] >> [YES].

- The [BLANK] Indication appears ❶ during the Blank Search.
- Approximately 1 second before the last recorded scene, the Movie Camera switches to the Still Playback Mode.
- If there is no blank portion left on the Cassette, the Movie Camera stops at the end of the tape.

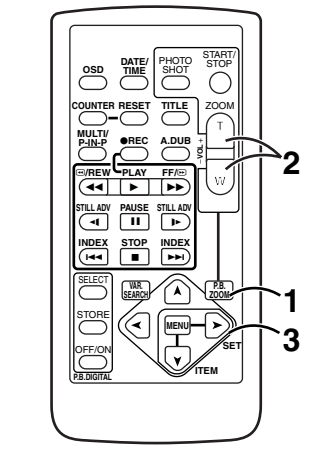
To Cancel Blank Search Before Completion

Press the [■] Button.





Ⓐ **INDEX** Ⓑ **S 1**



Index Search Functions

To facilitate searching of desired scene, this Movie Camera automatically records index signals during recording, as explained in the following.

Photoshot Index Signal

These signals are automatically recorded whenever still pictures are taken in Photoshot Mode. **(➜ 18)** Photoshot Index Signals are not recorded on still pictures recorded in Continuous Photoshot Mode.

Scene Index Signal

Scene Index Signals are automatically recorded when you start recording after inserting a Cassette.

- If [SCENEINDEX] of [RECORDING SETUP] Sub-Menu on the [CAMERA FUNCTIONS] Main-Menu is set to [2HOUR], an index signal is recorded when recording is restarted after an elapse of 2 hours or longer. If it is set to [DAY], an index signal is recorded when recording is restarted after the date has changed since the last recording. (While the index signal is recorded, the [INDEX] Indication flashes for a few seconds. Ⓐ)
- If the Movie Camera is switched from the VCR Mode to Camera Mode or if the date and time is set before the start of recording, the index signal is not recorded.

■Photoshot Index Search

1 Set [VCR FUNCTIONS] >> [PLAYBACK FUNCTIONS] >> [SEARCH] >> [PHOTO].

2 Press the [▶▶|] Button ❶ or [|◀◀] Button ❷ on the Remote Controller.

- With each press of the corresponding button, still pictures recorded in Photoshot Mode are searched.
- Sounds are played back for approximately 4 seconds.

■Scene Index Search

1 Set [VCR FUNCTIONS] >> [PLAYBACK FUNCTIONS] >> [SEARCH] >> [SCENE].

2 Press the [▶▶|] Button or [|◀◀] Button on the Remote Controller.

- When the corresponding button is pressed once, the [S 1] Indication Ⓑ appears, and searching of the subsequent scene marked with an index signal starts. Each time the button is pressed after the start of Scene Index Search, the indication changes from [S 2] to [S 9], and the beginning of the scene corresponding to the selected number will be searched.
- Up to 9 scene numbers can be selected.

Continuous Index Search

If the [▶▶|] Button or the [|◀◀] Button is pressed for 2 seconds or longer, search can be continued at several-second intervals. (To cancel, press the [▶] Button ❸ or the [■] Button ❹.)

- For other notes concerning this item, see page 45.

Playback Zoom Function

A part of the image can be enlarged up to 10 times during playback.

1 During playback, press the [P.B. ZOOM] Button on the Remote Controller.

- The centre of the image is enlarged to approximately 2 times.

To Change the Zoom Magnification

2 Change the magnification by pressing the [W] Button or [T] Button on the Remote Controller.

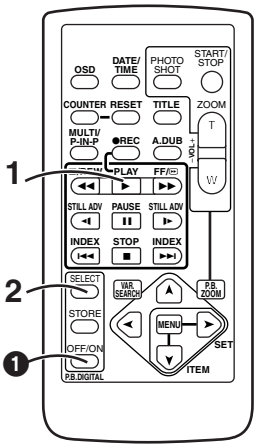
To Change the Enlarging Area of an Image

3 Press the Arrow Button (▲, ◄, ►, ▼) on the Remote Controller that points to the area you want to enlarge.

To Cancel the Playback Zoom Function

Press the [P.B. ZOOM] Button on the Remote Controller.

- For other notes concerning this item, see page 45.



Playback Digital Effect Functions

During playback, special digital effects can be added to the recorded pictures. The same effects as those of Digital Effects 1 and 2, which are used during recording, are obtained.

1 Press the [▶] Button.

2 Press the [SELECT] Button of the Remote Controller to select a desired digital effect.

- When the [SELECT] Button is pressed repeatedly, the digital effect selection changes.
- The same setting can be done using [DIGITAL EFFECT] Sub-Menu on the [VCR FUNCTIONS] Main-Menu.

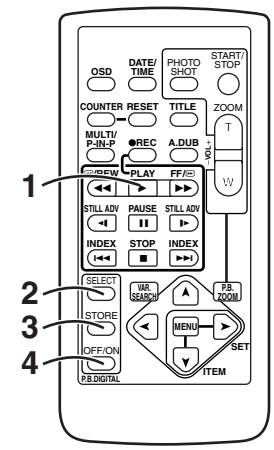
To suspend Playback Digital Effect Temporarily

Press the [OFF/ON] Button ❶ to suspend or restart the digital effect. When the digital effect is paused temporarily, the selected effect's indication flashes.

To Cancel the Digital Effect

Press the [SELECT] Button on the Remote Controller and clear the digital effect indication.

- For other notes concerning this item, see page 46.



■ Wipe Mode and Mix Mode

1 Press the [▶] Button.

2 Press the [SELECT] Button on the Remote Controller and select [WIPE] or [MIX].

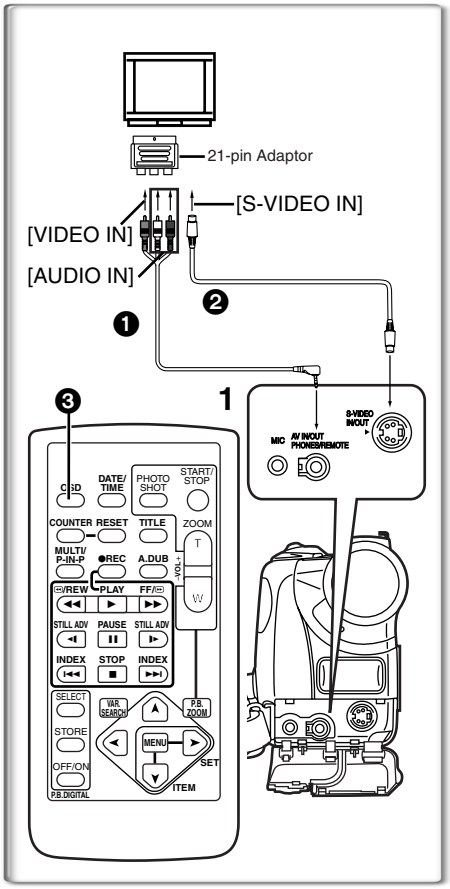
3 Press the [STORE] Button at the moment you want to save as a still picture.

- The [WIPE] or [MIX] Indication appears, and the image is saved.

4 Press the [OFF/ON] Button in the scene in which you want to use the Wipe or Mix effect.

- The scene changes as a result of the Wipe or Mix effect.

- The Wipe Function and Mix Function can be used only from the Remote Controller during playback.
- If the [OFF/ON] Button is pressed while Wipe or Mix is carried out, the effect will stop temporarily at that point. Pressing the [OFF/ON] Button again will bring back the effect.



Playing Back on Your TV

By connecting your Movie Camera with your TV, the recorded scenes can be viewed on your TV screen.

- Before connecting them, turn off the power of both the Movie Camera and TV.

1 Connect the [AV OUT] Socket of the Movie Camera and the Video and Audio Input Sockets of the TV.

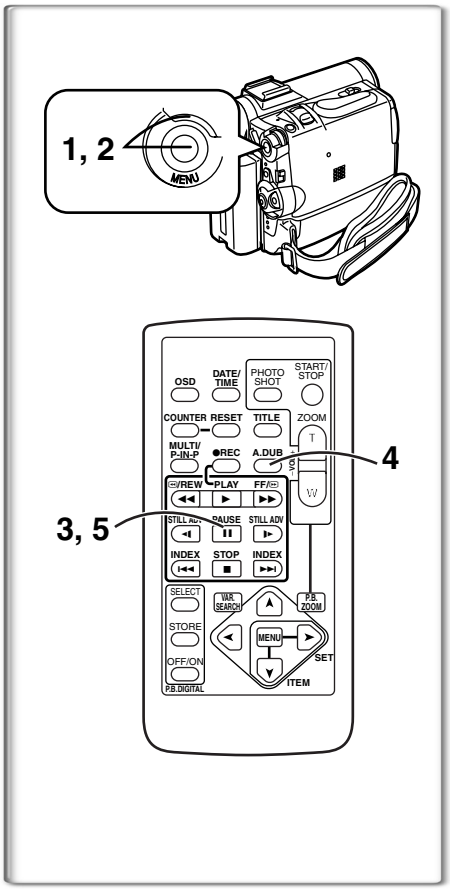
- Using the AV Cable ❶, make a connection with the TV. If the TV has an S-Video Socket, connect the S-Video Cable ❷ (not supplied), too.
- When plugging the pin plug of the AV cable into the AV input/output terminal, plug it in as far as it goes.

To Make the Indications Appear on the TV Screen

Press the [OSD] Button ❸ on the Remote Controller.

- If your TV is not equipped with AV Input Sockets, the 21-pin Adaptor (purchase separately) is necessary. Consult your dealer.

- For other notes concerning this item, see page 46.



Audio Dubbing

You can add music or narration to the recorded Cassette.

- If the tape recorded in the [16bit] Mode is dubbed with the Audio Dubbing function, the original sound is erased. (If you wish to preserve the original sound, use the [12bit] Mode when recording.)
- Audio Dubbing cannot be performed on a recording done in LP Mode. **(➜ 16)**

1 Set [VCR FUNCTIONS] >> [AV IN/OUT SETUP] >> [AV JACK] >> [IN/OUT]. (NV-GS5 only)

2 Continuing the aforesaid setup, select [A.DUB INPUT] >> [MIC] or [AV IN]. (NV-GS5 only)

- Set to [AV IN] when external device is used, and to [MIC] when an external or built-in microphone is used.

3 Switch the Movie Camera over to the Still Playback Mode where you want to add new sound.

4 Press the [A.DUB] Button on the Remote Controller.

5 To start Audio Dubbing, press the [❚❚] Button on the Remote Controller.

To Cancel Audio Dubbing

Press the [❚❚] Button on the Remote Controller.

The Movie Camera is in the Still Playback Mode again.

To Play Back the Sound Recorded by 12bit Audio Dubbing

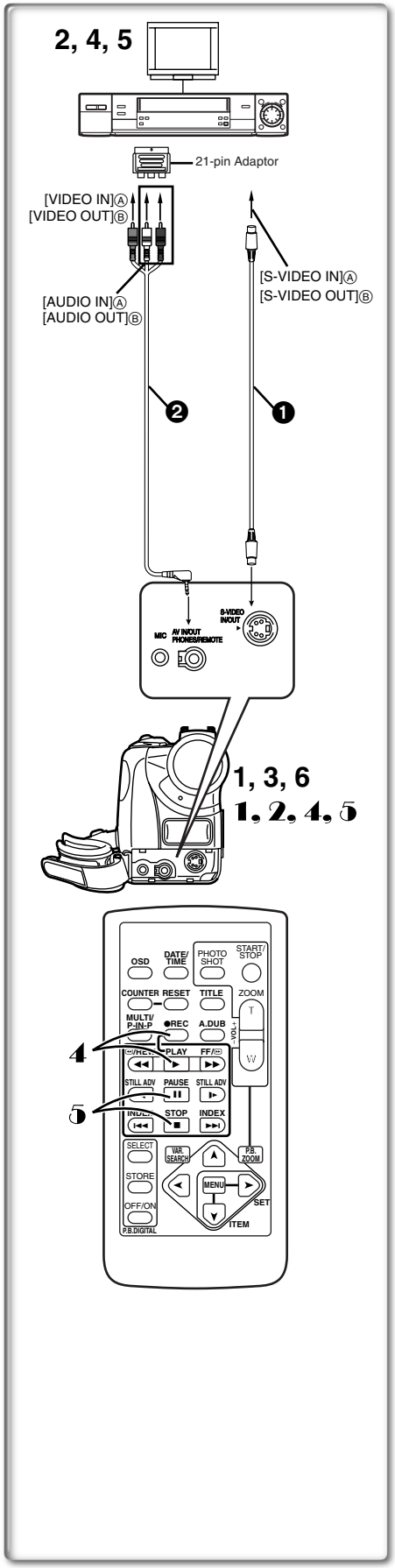
Set [VCR FUNCTIONS] >> [PLAYBACK FUNCTIONS] >> [12bit AUDIO] >> [ST2] or [MIX].

ST1: It plays back only the original sound.

ST2: It plays back only the sound added by Audio Dubbing.

MIX: It plays back both the original sound and the sound added by Audio Dubbing simultaneously.

- For other notes concerning this item, see page 46.



Copying on an S-VHS (or a VHS) Cassette

(Dubbing)

After connecting the Movie Camera and the VCR as illustrated at left Ⓐ, start the following procedures.

- If your TV is not equipped with AV Input Sockets, the 21-pin Adaptor (purchase separately) is necessary. Consult your dealer.
- Be sure to press the [OSD] Button **(➜ 7)** on the Remote Controller prior to copying so that no indications are visible. Otherwise, the displayed tape counter and function indications are also copied.

Movie Camera:

1 Insert the recorded Cassette.

VCR:

2 Insert an unrecorded Cassette with an erasure prevention tab.

- If various setups (such as external input, tape speed, etc.) are required, please refer to the operating instructions of your VCR.

Movie Camera:

3 Press the [▶] Button to start playback.

VCR:

4 Start recording.

5 Press the Pause or Stop Button to stop recording.

Movie Camera:

6 Press the [■] Button to stop playback.

❶ S-Video Cable (not supplied)
❷ AV Cable

Recording the Contents of Other Equipment

(NV-GS5 only)

After connecting the Movie Camera and the other equipment as illustrated at left Ⓑ, start the following procedures.

Movie Camera:

1 Set [VCR FUNCTIONS] >> [AV IN/OUT SETUP] >> [AV JACK] >> [IN/OUT].

2 Insert an unrecorded Cassette.

Other Equipment:

3 Insert a recorded Cassette and start playback.

Movie Camera:

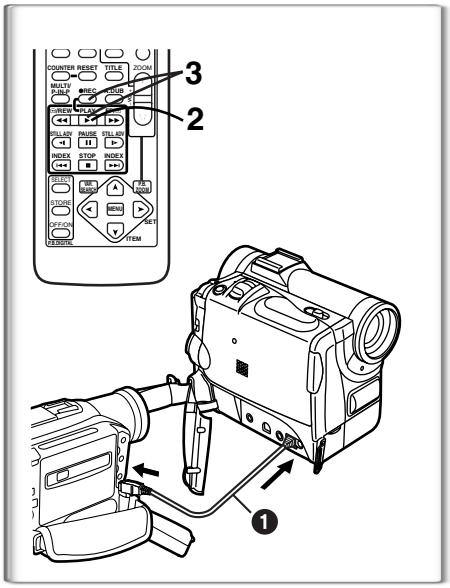
4 While pressing the [REC] Button, press the [PLAY] Button. (Both are on the Remote Controller.)

5 Press the [❚❚] Button or [■] Button to stop recording.

Other Equipment:

6 Press the Stop Button to stop playback.

- For other notes concerning this item, see page 46.



Using the DV Cable for Recording

(Digital Dubbing)

By connecting this Movie Camera with other digital video equipment that has a DV Input/Output Terminal using a DV Cable VW-CD1E (optional) ❶, dubbing can be done in the digital format.

- Only the NV-GS3/GS5 can be used as a Recorder.

[Player/Recorder]

1 Insert the Cassette and set to the VCR Mode.

[Player]

2 Press the [►] Button to start playback.

[Recorder]

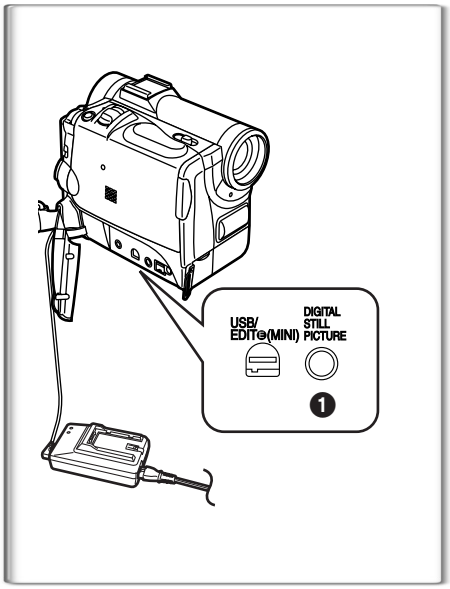
3 While pressing the [REC] Button, press the [PLAY] Button. (Both are on the Remote Controller.)

- Recording starts.

To Stop Dubbing

Press the [❚❚] Button or the [■] Button.

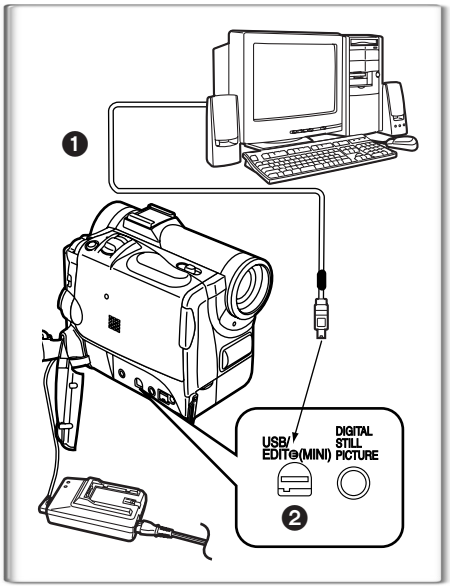
- For other notes concerning this item, see page 46.



Personal Computer Connection Kit

Using the optional Personal Computer Connection Kit, you can import still pictures into your personal computer.

- Use the Digital Still Picture Terminal [DIGITAL STILL PICTURE] ❶ when using the Personal Computer Connection Kit.
- When recording, be careful not to cut off the Time Code from the start of the tape.
- MPEG4 data or Voice data cannnot be used.
- For more details on the operating environment, connections, and procedures, please refer to Personal Computer Connection Kit's operating instructions.



USB Connection Kit

(NV-GS4/GS5 only)

Using the supplied USB Connection Kit, you can import still pictures into your personal computer.

1 Install the supplied USB driver.

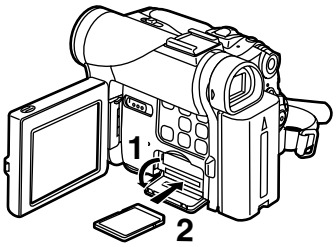
2 Set the Movie Camera to Card Playback Mode.

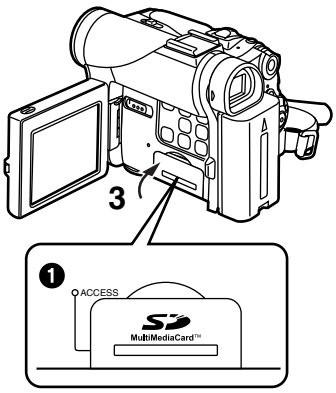
3 Set the Movie Camera to Still Playback Mode.

4 Connect the supplied USB Cable ❶ to [USB] Socket ❷.

- It enters PC connection mode.

- The USB Connection Kit can be used with Windows98 Second Edition/Me/2000/XP.
- Use AC Adaptor as power source for the Movie Camera. (The Card or its contents may be destroyed if battery power is lost while transmitting data.)
- Mode cannot be changed in PC connection mode by sliding [OFF/ON/MODE] Selector Switch.
- For more details on the operating environment, installation, connections, and procedures, please refer to USB Connection Kit's operating instructions.





CARD Mode

Using a Card

A Card can be used to record still pictures.

- Use genuine Card only.

Inserting a Card

Before inserting a Card, be sure to turn off the Movie Camera.

1 Open the Card Slot Cover.

2 While holding the Memory Card with its cut corner facing right, insert it into the Card Slot.

3 Close the Card Slot Cover securely.

Removing the Card

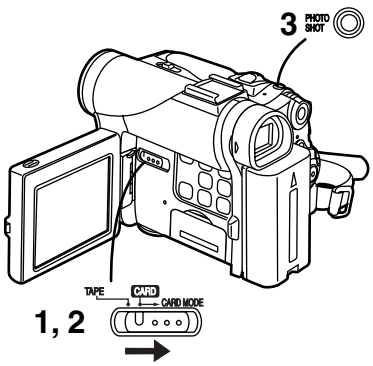
Open the Card Slot Cover and press the centre of the Card and then pull it straight out.

- After removing the Card, close the Card Slot Cover.
- The Movie Camera may be damaged if the Card is forced out when the Card is fully inserted.

[ACCESS] Lamp ❶

While the Movie Camera is making an access to the Card (reading, recording, playback, erasing or moving of images), the [ACCESS] Lamp lights up.

- While the [ACCESS] Lamp is on, never attempt to open the Card Slot Cover, to pull out the Card, to turn off the Movie Camera, or to switch the [TAPE/CARD/CARD MODE] Selector. Such actions will damage the Card, cause loss of recorded data and cause the Movie Camera to malfunction.



Recording on a Card

In NV-GS5, three kinds of data can be recorded by selecting with the [TAPE/CARD/CARD MODE] Selector. When recording picture, slide the [TAPE/CARD/CARD MODE] Selector until the [PICTURE] Indication ❶ appears (Card Photoshot), when recording moving picture, slide the [TAPE/CARD/CARD MODE] Selector until the [MPEG4] Indication ❷ appears (MPEG4 Recording), when recording voice, slide the [TAPE/CARD/CARD MODE] Selector until the [VOICE] Indication ❸ appears (Voice Recording).

In NV-GS4, only a still picture can be recorded on a Card.

- If the [TAPE/CARD/CARD MODE] Selector is set to [CARD] with a Card inserted, the Movie Camera is automatically turned off when you leave it for about 6 minutes without performing any photshot recording.
- When the [TAPE/CARD/CARD MODE] Selector is set to [CARD], you cannot record to the Tape.

Card Photoshot

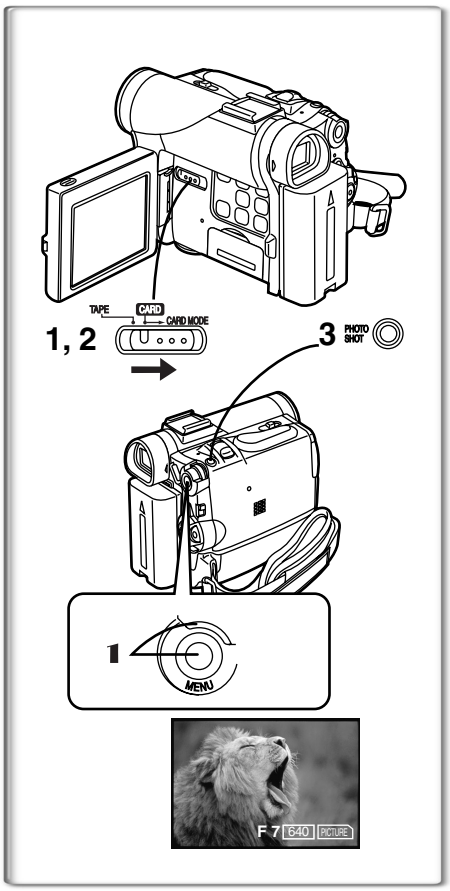
Recording from the Movie Camera Lens (CAMERA Mode)

1 Set the [TAPE/CARD/CARD MODE] Selector to [CARD].

2 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [PICTURE] Indication appears. (NV-GS5 only)

3 Press the [PHOTO SHOT] Button.

- The [PICTURE] Indication lights up in red.
- With the Progressive Photoshot Function, you can record still pictures with higher resolution than with the normal Photoshot Function. **(➜ 18)**



Recording from a Cassette (VCR Mode)

1 Set the [TAPE/CARD/CARD MODE] Selector to [CARD].

2 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [PICTURE] Indication appears. (NV-GS5 only)

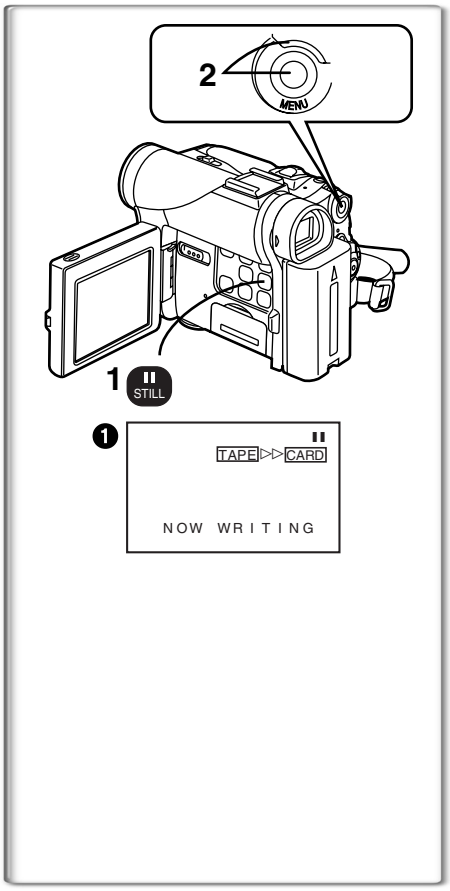
3 Start playback and set the Movie Camera to Still Playback Mode at the scene you wish to record, and press the [PHOTO SHOT] Button.

Selecting the quality of Card Photoshot images

1 Set [CAMERA FUNCTIONS] or [VCR FUNCTIONS] >> [CARD SETUP] >> [PICTURE QUALITY] >> a desired image quality.

Maximum number of images recordable on the supplied Card (8MB)

[FINE] (high image quality): approximately 45 pictures
[NORMAL] (normal image quality): approximately 85 pictures
[ECONOMY] (low image quality): approximately 190 pictures



■Automatically Copying Still Pictures That Have Already Been Recorded on a Tape

The images with the Photo Index signals are automatically recorded to the Card.

1 Set the Movie Camera to Still Playback Mode at the scene immediately before you want to start copying images.

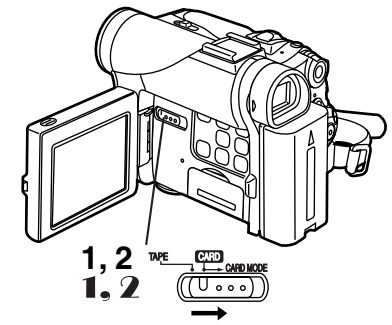
2 Set [VCR FUNCTIONS] >> [PLAYBACK FUNCTIONS] >> [RECORD TO CARD] >> [YES].

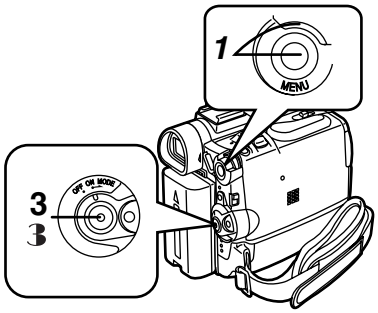
- During copying, the Indication ❶ appears.
- Search starts from the current Tape position, and images with Photo Index signals are recorded onto the Card sequentially.

To Stop Automatic Recording

Press the [■] Button.

- For other notes concerning this item, see page 46.





■Recording a Moving Picture (MPEG4) (NV-GS5 only)

You can record moving pictures for e-mailing on a Card. The recorded data can be also played back on Windows Media Player.

Recording from the Movie Camera Lens (Camera Mode)

1 Set the [TAPE/CARD/CARD MODE] Selector to [CARD].

2 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [MPEG4] Indication appears.

3 Press the Recording Start/Stop Button.

- It takes 2 to 3 seconds to start recording.
- During recording the [MPEG4] Indication is lit in red.
- The maximum continuous recording times are:
  [FINE] (high image quality): 2 minutes
  [NORMAL] (normal image quality): 60 minutes
  The Movie Camera will automatically stop recording when the relevant time listed above has elapsed.
- When Remaining Time Indication becomes [R:0h00m], this Indication flashes in red. Recording may not be started.

- The picture size of the moving picture (MPEG4) is set to be [176×144].
- When attaching to email, we recommed the picture size to be less than 1MB (about 1 minute length).
- The following functions are disabled:
  - Digital zooming **(➜ 19)**
  - Fade In/Out functions **(➜ 19)**
  - Digital Effect functions **(➜ 24)**
  - Title functions **(➜ 39)**

- For other notes concerning this item, see page 46.

Recording from a Cassette (VCR Mode)

1 Set the [TAPE/CARD/CARD MODE] Selector to [CARD].

2 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [MPEG4] Indication appears.

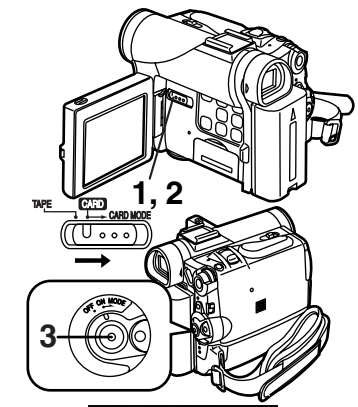
3 Start playback and press the Recording Start/Stop Button at the desired scene.

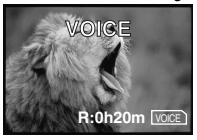
Selecting the quality of MPEG4 Recording images

1 Set [CAMERA FUNCTIONS] or [VCR FUNCTIONS] >> [CARD SETUP] >> [MPEG4 MODE] >> a desired image quality.

Maximum recording time on the supplied Card (8MB)

[NORMAL] : approximately 6 minutes





■Recording Voice (Voice Recording Function) (NV-GS5 only)

You can record voice data on a Card.

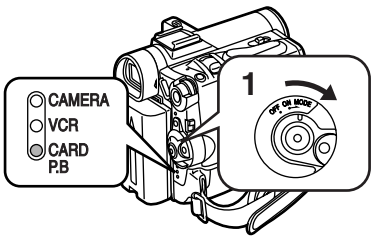
1 Set the [TAPE/CARD/CARD MODE] Selector to [CARD].

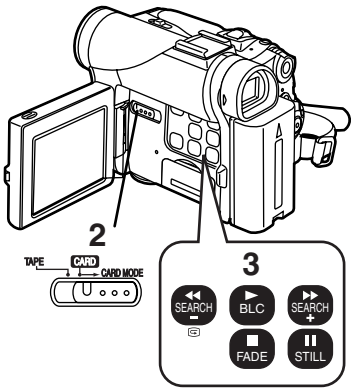
2 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [VOICE] Indication appears.

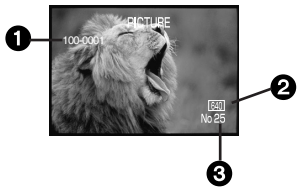
3 Press the Recording Start/Stop Button.

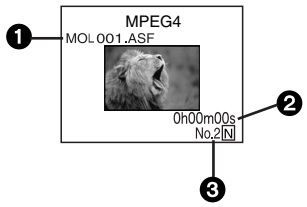
- Voice from built-in microphone is recorded.
- It takes 2 to 3 seconds to start recording.
- The recorded file is automatically locked (to prevent accidental erasure).
- Voice from external microphone connected to the [MIC] Socket can also be recorded.
- During recording, the [VOICE] Indication is lit in red.
- If a Card is not inserted, the [VOICE] indication flashes in red.
- When Remaining Time Indication becomes [R:0h00m], this Indication flashes in red. Recording may not be started.
- This function is not available in VCR Mode.

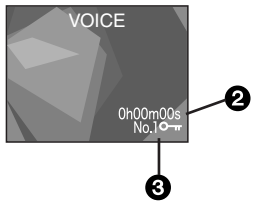
- For other notes concerning this item, see page 46.











Playing Back a Card

It plays back files recorded on a Card.

1 Set the Movie Camera to Card Playback Mode.

- The [CARD P.B] Lamp lights up.
- The file that was recorded last on the Card is displayed.

2 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until [PICTURE], [MPEG4] or [VOICE] Indication appears. (NV-GS5 only)

3 Start Playback.

►: Playing back the File
►►: Playing back the next File
◄◄: Playing back the previous File
■: Stop playing back
❚❚: Pause playing back (When playing back MPEG4 Data or Voice Data, this button does not pause playing back within 2 seconds of finishing playing back.)

When [MPEG4] Indication appears at step2

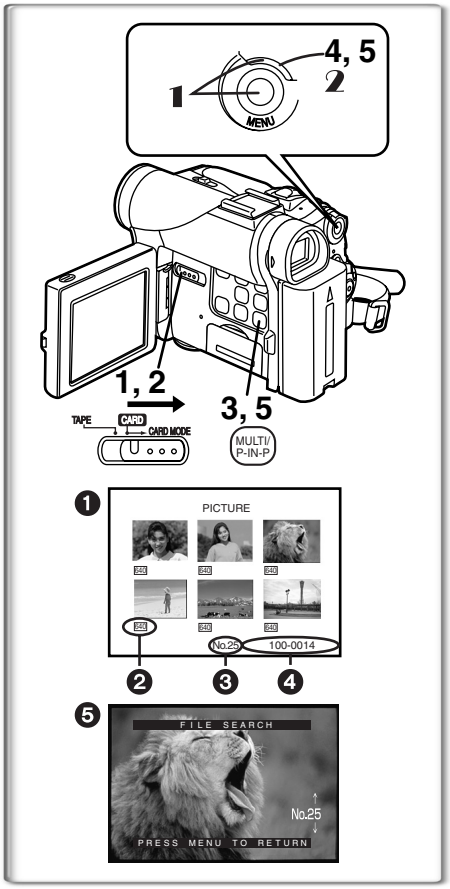
- File is numbered in hexadecimal.
- When the object is moving fast or zoom operation is performed, picture may appear to be still or causes mosaic-pattern noise, but this is not a malfunction.

When [VOICE] Indication appears at step2

- If the Operation Lever is pushed towards [◄◄] or [►►] for 1 or more seconds, it becomes 10× playback and keep pressing for 7 or more seconds, it becomes 60× playback. Releasing the Operation Lever brings back to normal playback.

- When [MPEG4] or [VOICE] Indication appears at step 2, during playback, keep pressing [PUSH] Dial until the volume Indication appears and turn it to adjust the volume. **(➜ 26)**

❶ Folder-File Number (When the picture or MPEG4 is played back only)
❷ Picture Size (When the picture is played back)
Playback time (When MPEG4 data or Voice data is played back)
❸ File Number



To Select a Desired File and Play It Back

1 Set the [TAPE/CARD/CARD MODE] Selector to [CARD].

2 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the desired type of data indication appears. (NV-GS5 only)

3 Press the [MULTI] Button.

- The files recorded on the Card are displayed in Multi-Picture Mode. ❶

4 Turn the [PUSH] Dial and select a desired file.

- The selected file is marked with a frame.
- When 7 or more files have been recorded, turn the [PUSH] Dial to display the next file. (The [◀◀] Button or [▶▶] Button can be used instead of the [PUSH] Dial.)

5 Press either the [PUSH] Dial or the [MULTI] Button.

- The selected file is shown on the entire screen.

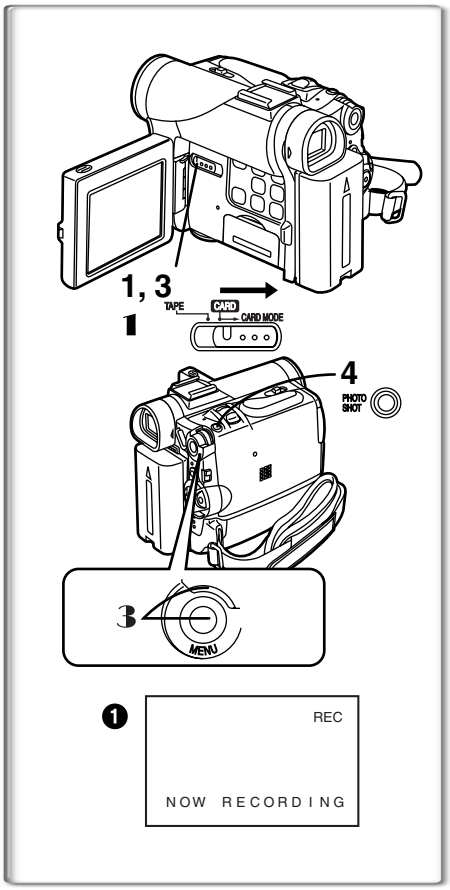
❷ Picture Size (When [PICTURE] is selected at Step 2)
FINE or NORMAL (When [MPEG4] is selected at Step 2)
❸ File Number
❹ Folder-File Number (When [PICTURE] or [MPEG4] is selected at Step 2)

Using File Search Mode

1 Set [CARD FUNCTIONS] >> [CARD EDITING] >> [FILE SEARCH] >> [YES].

2 Turn the [PUSH] Dial and select the desired file number, and press the [PUSH] Dial. ❺

- For other notes concerning this item, see page 46.



Recording Pictures on a Card to a Tape

Card Images can be recorded on the Tape one at a time or all automatically. After setting to Card Playback Mode, please carry out the following procedures.

To Copy 1 Picture

1 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [PICTURE] Indication appears. (NV-GS5 only)

2 Display a desired picture.

3 Set the [TAPE/CARD/CARD MODE] Selector to [TAPE].

4 Press the [PHOTO SHOT] Button.

- During the copying, the indication ❶ appears.
- It takes a few seconds to record a picture to the Tape.

- When recording to tape, select the tape position before recording. The picture will be recorded to the tape position when the [PHOTO SHOT] Button is pressed at Step 4.

To Copy All the Pictures

1 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [PICTURE] Indication appears. (NV-GS5 only)

2 Display the first picture.

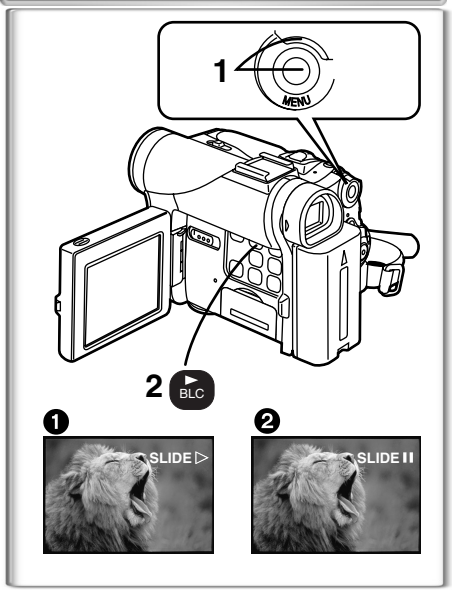
- If a picture other than the first one is displayed, only the subsequent pictures will be copied.

3 Set [CARD FUNCTIONS] >> [CARD EDITING] >> [RECORD TO TAPE] >> [YES].

- During the copying, the indication ❶ appears.
- It takes a few seconds for each picture to be copy on the Tape. To stop the copying midway, press the [■] Button.

- Moving Picture (MPEG4) and Voice data cannot be recorded from a Card to tape. (NV-GS5 only)

- For other notes concerning this item, see page 47.



Slide Show

The recorded still pictures in the Card can be played back like a Slide Show.

To Play Back All the Pictures Continuously

1 Set [CARD FUNCTIONS] >> [CARD EDITING] >> [SLIDE SHOW] >> [YES] >> [SLIDE SHOW] >> [ALL].
- This step is skipped when there is no picture that has set for the Slide Show.

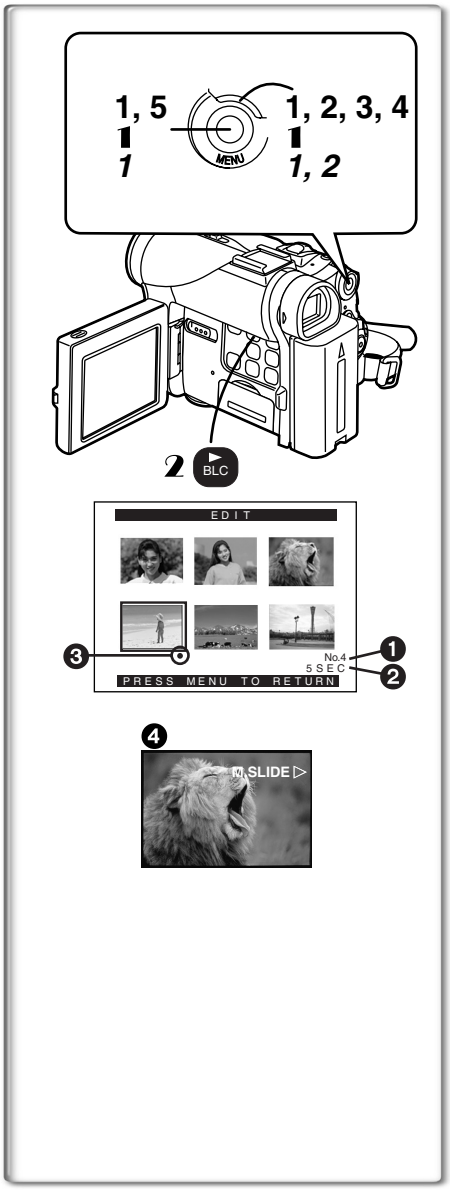
2 Press the [►] Button.
- The [SLIDE▷] Indication is displayed. ❶
- All of the pictures are played back for several seconds each.

To Pause the Slide Show

Press the [❚❚] Button.
The [SLIDE❚❚] Indication is displayed. ❷

To Stop the Slide Show

Press the [■] Button.



Editing a Slide Show

You can set up a Slide Show or change the content.

To Select Pictures to Play Back in Your Slide Show

1 Set [CARD FUNCTIONS] >> [CARD EDITING] >> [SLIDE SHOW] >> [YES] >> [EDIT] >> [YES].

2 Turn the [PUSH] Dial to select a picture and then press the dial.

3 Turn the [PUSH] Dial to select playback order and then press the dial.
- This step is skipped when there is no picture that has set for the Slide Show.
- Playback Order Indication ❶

4 Turn the [PUSH] Dial to adjust the playback time and press the dial.
- Playback Time (Second) Indication ❷
- The [●] Indication ❸ is displayed to the picture set.
- To select the next picture, repeat the Steps 2 to 4 above.

5 Press the [MENU] Button to end the setup.

To Play Back the Slide Show That Has Been Set

You must set [SLIDE SHOW] >> [EDIT] first.

❚ Set [CARD FUNCTIONS] >> [CARD EDITING] >> [SLIDE SHOW] >> [YES] >> [SLIDE SHOW] >> [PRESET].

❷ Press the [►] Button.
- The [M.SLIDE▷] Indication is displayed. ❹

To Verify the Selected Picture

Set [CARD FUNCTIONS] >> [CARD EDITING] >> [SLIDE SHOW] >> [YES] >> [VERIFY] >> [YES].
- Only the selected pictures are displayed in Multi-Picture Mode in the Playback order.

To Delete the Selected Picture

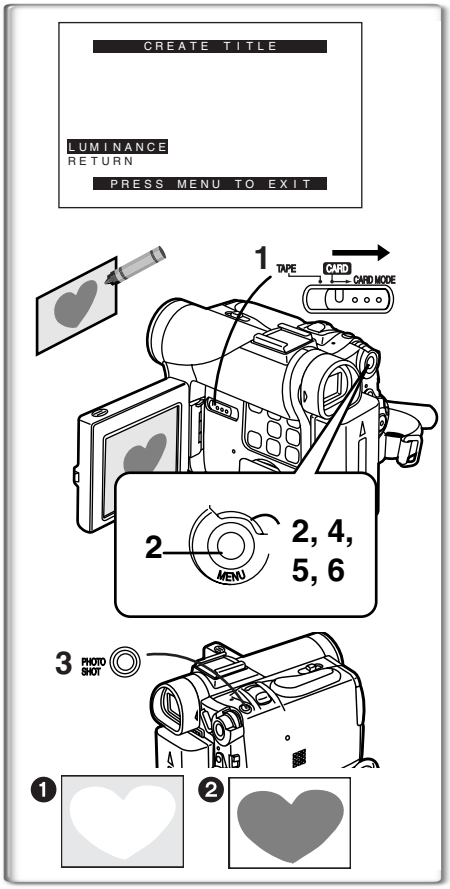
***1* Set [CARD FUNCTIONS] >> [CARD EDITING] >> [SLIDE SHOW] >> [YES] >> [DELETE] >> [YES].**

***2* Select the picture you wish to delete and press the [PUSH] Dial.**
- The selected picture is marked with a frame.

To Reset the Slide Show Setup

Set [CARD FUNCTIONS] >> [CARD EDITING] >> [SLIDE SHOW] >> [YES] >> [RESET] >> [YES] >> [YES].
- Slide Show settings are reset.

- For other notes concerning this item, see page 47.



Creating a Title

You can create a title and record on a Card.

1 Camera Mode:
In NV-GS5, slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until [PICTURE] Indication appears first.
Set the Lens to the image you want to use for creating a title.
VCR Mode:
Search for the image you want to use for creating a title and set the Movie Camera to the Still Playback Mode.

2 Set [CARD SETUP] >> [CREATE TITLE] >> [YES].

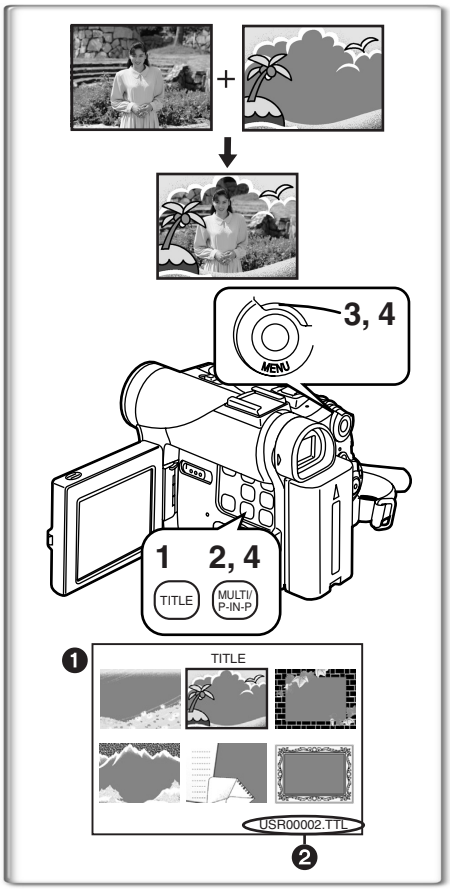
3 Press the [PHOTO SHOT] Button.
- The title is stored.
- To perform Photoshot again, select [RETURN].

4 Select [LUMINANCE] and press the [PUSH] Dial, turn it to adjust the title contrast and press it.

5 Select [COLOUR] and press the [PUSH] Dial, turn it to adjust the colour and press it.
- The dark portion of the image is missing ❶, and the colours of the bright portion change in order the original colour, black, blue, green, cyan, red, magenta, yellow and white, after which the bright portion of the image is missing ❷ and the colours of the dark portion change in the above order.

6 Select [RECORD] and press the [PUSH] Dial.
- The title is recorded on the Card.

●For other notes concerning this item, see page 47.



Adding a Title

A title can be added to the picture. It is displayed in Camera Mode, VCR Mode and Card Playback Mode.

1 Press the [TITLE] Button.
- The title is displayed.

2 Press the [MULTI] Button.
- A list of titles is displayed. ❶

3 Turn the [PUSH] Dial to select a desired title.
- The selected title is marked with a frame.

4 Press the [PUSH] Dial or press the [MULTI] Button.
- The selected title is displayed.
- Recording and Photoshot Recording can be done with pictures that have titles.

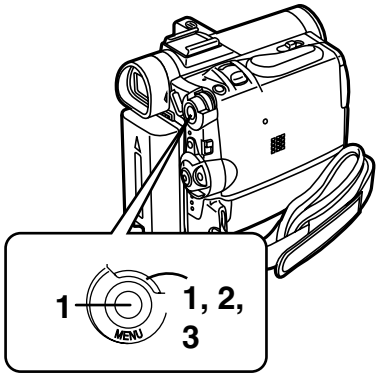
❷ File Name

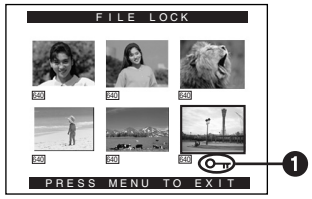
To Clear the Title Display

Press the [TITLE] Button.

- The [ACCESS] Indication appears until the titles are displayed completely. Perform the Recording after the [ACCESS] Indication disappears.
- The supplied Card contains titles. If an original title has not been created, a preset title will be displayed.

●For other notes concerning this item, see page 47.





Protecting the Files on a Card

(Lock Setting)

Precious files recorded on a Card can be locked (to prevent accidental erasure). (Even if files are locked, the files will be deleted when the Card is formatted.)

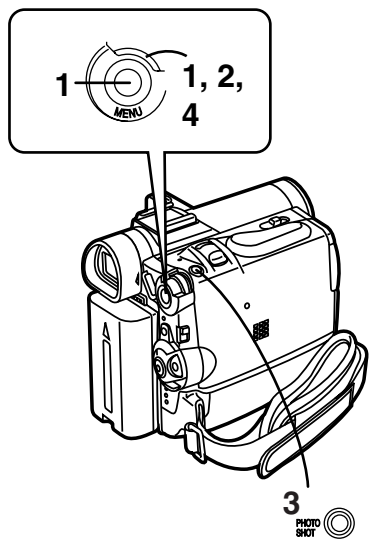
1 Set [CARD FUNCTIONS] >> [CARD EDITING] >> [FILE LOCK] >> [YES].
- The [FILE LOCK] Menu is displayed.

2 Select [PICTURE] or [TITLE].

3 Select the file to be locked, and press the [PUSH] Dial.
- The selected file is locked and the [⚷] Indication ❶ is attached. Repeat this procedure to lock 2 or more.
- Files recorded by Voice Recording Function is automatically locked (to prevent accidental erasure). (NV-GS5 only)
- Press the [PUSH] Dial again to cancel.

- The SD Memory Card has a write protection switch. **(➜ 47)**

- For other notes concerning this item, see page 47.



Deleting the Files Recorded on a Card

Using the Movie Camera, you can delete the files recorded on a Card. After the file is deleted, it cannot be restored.

In NV-GS5, slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the type of data to be erased indication appears first.

To Select and Delete Files

1 Set [CARD FUNCTIONS] >> [ERASE CARD FILE] >> [ERASE FILE BY SELECTION].
- To erase a title, select [ERASE TITLE BY SELECTION].

2 Select the file you wish to delete and press the [PUSH] Dial.
- The frame around the selected file flashes.
- To erase 2 files or more, repeat this step.

3 Press the [PHOTO SHOT] Button.
- A verification message appears.

4 Select [YES] and press the [PUSH] Dial.
- The selected file is deleted from the Card.
- If [NO] is selected, the file selection is cancelled.

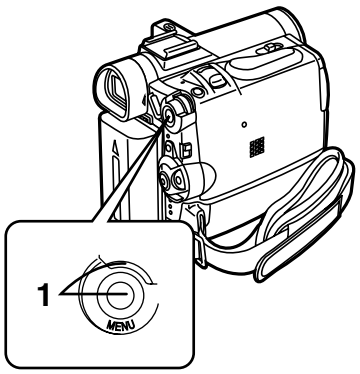
- To erase 2 files or more, repeat 2–4 steps.

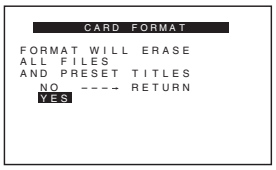
To Select and Delete All Files

1 Set [CARD FUNCTIONS] >> [ERASE CARD FILE] >> [ERASE ALL FILES].
- A verification message appears.

2 Select [YES] and press the [PUSH] Dial.
- In NV-GS5, all the files of the selected Card Mode ([PICTURE], [MPEG4] or [VOICE]) are erased.
- A locked file cannot be erased.

- When you delete Voice File, be sure to cancel the Lock setting before deleting. (NV-GS5 only)
- Do not delete the Voice Files recorded with this Movie Camera using other devices. (NV-GS5 only)





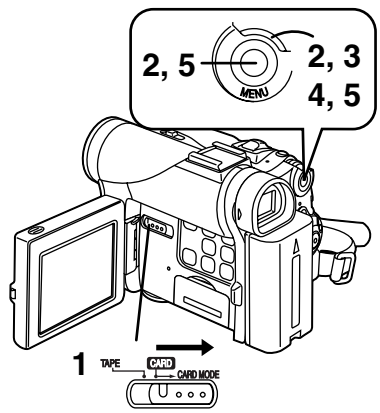
Formatting a Card

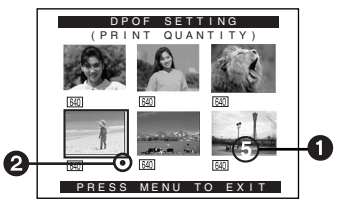
If a Card becomes unreadable by the Movie Camera, formatting it may make it reusable. Formatting erases all the data recorded on a Card.

1 Set [CARD FUNCTIONS] >> [CARD EDITING] >> [CARD FORMAT] >> [YES].

- Since a confirmation message appears, select [YES] and formatting will be carried out.
- When the formatting is completed, the screen becomes white.

- It may not be possible to use the Card which was formatted using this Movie Camera on another unit. In this case, format the Card on the unit which will be using the Card. Take steps to ensure that valuable pictures are stored on the personal computer, etc. as well before proceeding.
- A Card formatted with an other equipment (like a Personal Computer) might be unusable or it might take more time for recording. We recommend that you use this equipment to format it.





Writing Printing Data on a Card

(DPOF Setting)

DPOF Setting Printing data (DPOF Settings), such as the number of images to be printed, can be written to the Card. “DPOF” means Digital Print Order Format.

1 Slide the [TAPE/CARD/CARD MODE] Selector to [CARD MODE] until the [PICTURE] Indication appears. (NV-GS5 only)

2 Set [CARD FUNCTIONS] >> [CARD EDITING] >> [DPOF SETTING] >> [YES] >> [VARIABLE].

- To print all pictures one at a time, select [ALL 1]. When all images are not printed, select [ALL 0].

3 Select a desired picture and press the [PUSH] Dial.

- The selected picture is marked with a frame.
- The number of prints set by DPOF is displayed. ❶

4 Turn the [PUSH] Dial and select the number of pictures to be printed, and press the [PUSH] Dial.

- [●] Indication ❷ is displayed in the picture set.

5 Repeat Step 3 and 4 and press the [MENU] Button when the setup is completed.

To Verify DPOF Setting

Select [VERIFY] in Step 2 above. The pictures for which 1 or more print is set in DPOF are played back continuously.

- For other notes concerning this item, see page 48.

Others

Indications

Various functions and the Movie Camera status are shown on the screen.

- Some Indications may not be displayed according to the model.

[▬▬]: Remaining Battery Power
- When the battery power becomes low, the Indication changes. When the battery is discharged completely, the [▭] ([▭]) Indication flashes.

[▬▬]: (When you are using the AC Adaptor, the [[▬▬]] Indication may appear, however, this is not a malfunction.)

R0:45: Remaining Tape Time
- Remaining tape time is indicated in minutes. (When it reaches less than 3 minutes, the indication starts flashing.)

CINEMA: Cinema Mode **(➜ 20)**
D.ZOOM: Digital Zoom **(➜ 19)**
MULTI: Multi Mode **(➜ 24)**
P-IN-P: P-IN-P Mode **(➜ 24)**
WIPE: Wipe Mode **(➜ 24)**
MIX: Mix Mode **(➜ 24)**
STROBE: Strobe Mode **(➜ 24)**
GAINUP: Gain-up Mode **(➜ 24)**
TRACER: Trailing Effect Mode **(➜ 24)**
MOSAIC: Mosaic Mode **(➜ 24)**
MIRROR: Mirror Mode **(➜ 24)**
NEGA: Negative Mode **(➜ 24)**
SEPIA: Sepia Mode **(➜ 24)**
B/W: Black & White Mode **(➜ 24)**
SOLARI: Solarisation Mode **(➜ 24)**
PB ZOOM: Playback Zoom **(➜ 28)**
SP: Standard Mode (Recording Speed Mode) **(➜ 16)**
LP: Long Play Mode (Recording Speed Mode) **(➜ 16)**
INDEX: Index signal recording **(➜ 28)**
S 1: Search Number **(➜ 28)**
5×: Zoom Magnification Indication **(➜ 18)**
AUTO: Automatic Mode **(➜ 17)**
MNL: Manual Mode **(➜ 21, 22, 23)**
: Image Stabilizer **(➜ 19)**
MIC, AV IN: Audio Dubbing Input Display **(➜ 30)**
12 bit, 16 bit: Audio Recording Mode **(➜ 16)**
MF: Manual Focus **(➜ 23)**
: Back Light Mode **(➜ 20)**
: Sports Mode (Programme AE) **(➜ 21)**
: Portrait Mode (Programme AE) **(➜ 21)**
: Low Light Mode (Programme AE) **(➜ 21)**
: Spotlight Mode (Programme AE) **(➜ 21)**
: Surf & Snow Mode (Programme AE) **(➜ 21)**
REC: Recording **(➜ 17)**
PAUSE: Recording Pause **(➜ 17)**
▷: Playback **(➜ 26)**/Forward Camera Search **(➜ 17)**
◁: Reverse Camera Search **(➜ 17)**
❚❚: Still Playback **(➜ 27)**
▷▷: Fast-forward/Cue Playback **(➜ 26)**
◁◁: Rewind/Review Playback **(➜ 26)**
◁❚, ❚▷: Slow Motion Playback **(➜ 27)**
◁❚❚, ❚❚▷: Still Advance Playback **(➜ 27)**
⏮, ⏭: Index Search **(➜ 28)**
CHK: Recording Check **(➜ 17)**

A.DUB ▷: Audio Dubbing **(➜ 30)**
A.DUB ❚❚: Audio Dubbing Pause **(➜ 30)**
PHOTO: Photoshot Mode Recording **(➜ 18)**
BLANK: Blank Search **(➜ 27)**
R ▷: Repeat Playback **(➜ 45)**
2× ▷▷: Variable Speed Search **(➜ 26)**
1/500: When you adjust shutter speed manually, this indication appears. **(➜ 23)**
SLIDE▷: Slide Show Playback **(➜ 38)**
SLIDE❚❚: Slide Show Playback Pause **(➜ 38)**
M.SLIDE▷: Manual Slide Show Playback **(➜ 38)**
M.SLIDE❚❚: Manual Slide Show Playback Pause **(➜ 38)**
F2.4: When you adjust the F Number manually, this indication appears. **(➜ 23)**
AWB: Automatic White Balance Mode **(➜ 21)**
: White Balance setting Mode **(➜ 21)**
: Outdoor Mode **(➜ 21)**
: Indoor Mode (recording under incandescent lamp) **(➜ 21)**
C.NIGHT VIEW: Colour Night View Function **(➜ 20)**
Z.MIC: Zoom Microphone **(➜ 18)**
WIND CUT: Wind Noise Reduction **(➜ 21)**
[P]: Progressive Photoshot Mode **(➜ 18)**
PICTURE: Picture **(➜ 36)**
TITLE: Title picture **(➜ 39)**
MPEG4: Moving Picture (MPEG4) **(➜ 36)**
VOICE: Voice data **(➜ 36)**
0h00m00s: Recording time of MPEG4 or Voice data
VOLUME: Volume adjustment **(➜ 26)**
15:30:45: Date/Time Indication **(➜ 43)**
N (F, E): Card Photoshot Picture Quality (during Card Photoshot recording) or MPEG4 Picture Quality [F] means Fine, [N] means Normal and [E] means Economy. **(➜ 34, 35)**
ACCESS: While Card is being read (during Playback, Formatting and Multi-Picture Function use). **(➜ 33)**
00: Remaining Number of Card Photoshot pictures **(➜ 33)**
R:0h00m: Remaining time of MPEG4 or Voice data
: Lock Setting **(➜ 40)**
● (White): DPOF Setting completed (set to 1 or more picture) **(➜ 41)**
● (Green): Slide Show Settings completed **(➜ 38)**
● (Blue): DPOF Setting (set to 1 or more picture)/Slide Show Settings both completed **(➜ 38, 41)**
[640]: [640×480] Image size
- For images not recorded with this Movie Camera, the size display is determined as follows according to the number of horizontal pixels.

[640]: From 640 to 800 (The size is not displayed at under 640 pixels.)
[SVGA]: From 800 to 1024
[XGA]: From 1024 to 1280
[SXGA]: From 1280 to 1600
[UXGA]: Over 1600
[PICTURE] (Cyan): Card Photoshot Mode
[PICTURE] (Red): While Card Photoshot recording is activated
[PICTURE] (Red): No Card (Still Picture Mode)
[MPEG4] (Cyan): Moving Picture (MPEG4) Recording
[MPEG4] (Red): While Moving Picture (MPEG4) recording is activated
[MPEG4] (Red): No Card (MPEG4 Mode)
[VOICE] (Cyan): Voice Recording Mode
[VOICE] (Red): While Voice Recording is activated
[VOICE] (Red): No Card (Voice Recording Mode)

■To Change the Counter Display Mode

By changing [C.DISPLAY] on the [DISPLAY SETUP] Sub-Menu, you can change the Counter Display Mode to Tape Counter Indication [COUNTER] (0:00.00), Memory Counter Indication [MEMORY] (M0:00.00), and Time Code Indication [TIMECODE] (0h00m00s00f). **(➜ 12)** By repeatedly pressing the [COUNTER] Button on the Remote Controller, you can change the Counter Display Mode.

■To Display Date/Time Indication

To display Date/Time Indication, set the appropriate Date/Time in [DATE/TIME] on the [DISPLAY SETUP] Sub-Menu. **(➜ 12)**

You can also press the [DATE/TIME] Button of the Remote Controller repeatedly to display or change the Date/Time Indication.

■To Change the Display Mode

By changing [DISPLAY] on the [DISPLAY SETUP] Sub-Menu, you can change the Display Mode to All Function Display [ALL], Partial Display [PARTIAL] and Minimum Display [OFF].

Owner ID

You can register your name and address in your Movie Camera to identify the owner.

1. **Set [CAMERA FUNCTIONS] >> [OTHER FUNCTIONS] >> [OWNER ID SET] >> [YES].**
   - The [OWNER ID] Menu appears.
2. **Turn the [PUSH] Dial to select [PIN NUMBER] and press the [PUSH] Dial to input desired numbers.**
3. **Turn the [PUSH] Dial to select numbers and press the [PUSH] Dial to enter them.**
   - You can input 4 digits.
4. **Push the Operation Lever towards [■].**
5. **Repeat Steps 2–4 to input desired characters for [NAME]/[POSTCODE].**
   - You can input up to 12 characters in [NAME], and up to 11 characters in [POSTCODE].
6. **Push the Operation Lever towards [■] to finish the setup.**

To verify Owner ID

- Keep pushing the Operation Lever towards [❚❚] for approximately 5 seconds.

To Check Owner ID

If Owner ID has already been set, carrying out Step 1 above will display [INPUT PIN NUMBER] on the screen. Input the Pin Number you have already selected. If the number is not correct, the screen will not change. If the number is correct, the contents of the setup will be displayed. (By repeating Steps 2 to 4 above, you can change the contents.)

Warning/Alarm Indications

If any one of the following indications lights up or flashes, please check the condition of the Movie Camera.

- Some Indications may not be displayed according to the model.

[💧]:	Condensation has occurred. **(➜ 49)**
📼:	The accidental erasure prevention slider on the inserted Cassette is open (that is, set to [SAVE]). You are about to do audio dubbing on the unrecorded (blank) portion of the tape. No Cassette is inserted. **(➜ 10)**
🔋:	The Battery is low. Recharge it. **(➜ 9)**
🔋:	The built-in battery is low. **(➜ 16)**
⊗:	The video heads are dirty. **(➜ 49)**
📼END:	The tape came to end during recording.
REMOTE:	Wrong Remote Controller Mode has been selected. **(➜ 8)**
PRINTER ERROR:	The Video Printer is not connected correctly, or the Video Printer is not functioning properly.
UNPLAYABLE TAPE (OTHER FORMAT):	You are attempting to play back a tape section that has been recorded with a different TV system.
UNABLE TO A. DUB (LP RECORDED):	Because the original recording was done in LP Mode, audio dubbing cannot be performed.
INCOMPATIBLE TAPE:	This Cassette is incompatible.
PLEASE RE-OPERATE AFTER PUSHING RESET BUTTON:	Mechanism Irregular is detected. Press the [RESET] Button **(➜ 6)**. This may solve the problem.
	You are attempting to record to a Memory Card formatted with an other equipment (like a Personal Computer). Format the Memory Card with this equipment.
TO SERVICE:	It is a malfunction.
CARD FULL:	Card does not have sufficient memory remaining. Select Card Mode and delete unnecessary files.
NO CARD:	Card is not inserted.
NO FILE:	Card has no files recorded on it.
CARD ERROR:	This Card is not compatible with this Movie Camera.
COPY INHIBITED:	Because the medium is protected by a copy guard, images cannot be recorded correctly.
INCORRECT OPERATION:	You are attempting to record to a tape in VCR Mode. In NV-GS5, [TAPE/CARD/CARD MODE] Selector is set to [MPEG4] or [VOICE] when [PHOTO SHOT] Button is pressed. You are attempting to record to a tape in Card Mode.

Notes and Hints

■Concerning the Power Supply

- When the Movie Camera is used for a long time, the Camera body becomes warm, but this is not a malfunction.
- If the [CHARGE] Lamp does not light up although the Battery is attached to AC Adaptor, detach the Battery and reattach it.
- Battery CGP-D110 and CGP-D105 cannot be charged with this AC Adaptor.

Inserting/Removing the Cassette

- In the case of using a previously recorded Cassette, you can use the Camera Search Function to find the position where you want to continue recording.
- If a new Cassette is inserted, rewind to the beginning of the tape before starting recording.
- When inserting the cassette, make sure it faces in the right direction and then push it in until it stops.

Alarm Sounds

When [BEEP SOUND] on the [OTHER FUNCTIONS] Sub-Menu on the [CAMERA FUNCTIONS] Main-Menu is set to [ON], confirmation/alarm beeps are issued as follows.

1 Beep

- When you start recording
- When you switch the [OFF/ON/MODE] Switch from [OFF] to [ON]

2 Beeps

- When you pause recording

10 Beeps

- If you perform a wrong operation before or during recording

Recording

- Before turning on the power, remove the Lens Cap. If the Lens Cap is still attached when the power is turned [ON], Automatic White Balance Adjustment **(➜ 22)** may not function correctly.

Recording Check

- For Recording Check, the recording speed mode (SP/LP) must be the same as the mode used for the recording. If different, playback images will be distorted.

Camera Search

- In Camera Search Mode, images may contain mosaic-pattern noise. This is a phenomenon that is characteristic of digital video and not a malfunction.
- If the recording speed modes (SP/LP) of previous recording and new recording are different, playback images may be distorted.

Photoshot

- Photoshot Recording results in slightly inferior image quality.

Progressive Photoshot Function

- The still pictures are recorded at a slightly rewound point from where you press the [PHOTO SHOT] Button.
- When you change to the Still Picture Mode, you will hear a click. This is the sound of the iris closing and not an indication of malfunction.
- If you record still pictures in Progressive Photoshot Mode when your Movie Camera is set to Programme AE **(➜ 21)**, the brightness of the images may change.

About [PROGRESSIVE] Setup

- When the [P] Indication is displayed, you can use the Progressive Photoshot Function.

When [PROGRESSIVE] is [ON]:

You can use the Progressive Photoshot Function at any time. In this case, however, the following functions are disabled.

- Digital Effect Modes in [EFFECT1] **(➜ 24)**
- Digital Zoom [D.ZOOM] **(➜ 19)**
- 1/750 s or faster shutter speed **(➜ 23)**

When [PROGRESSIVE] is set to [AUTO]

You cannot use the Progressive Photoshot Function in the following cases.

- When the zoom magnification is approximately 10× or higher
- When the shutter speed is 1/750 s or faster
- When [EFFECT1] is set to [WIPE], [MIX], [STROBE], [GAINUP], [TRACER], [MOSAIC], [MIRROR]
- When the pictures are displayed on a Multi screen

Zoom In/Out Functions

- When you are zooming on a faraway subject, a sharper focus is achieved if the recording subject is 1.2 metres or more away from the Movie Camera.

Image Stabilizer Function

- The Image Stabilizer Function does not operate in a dimly lit place. In this case, the [ ] Indication flashes.
- Under fluorescent lighting, image brightness may change or colours may not look natural.
- After-images may appear.
- When a tripod is used, it is recommended that you turn the Image Stabilizer off.
- The Image Stabilizer Function does not operate when using the Colour Night View. In this case, the [ ] Indication flashes.

Cinema Function

- Using the Cinema Mode does not widen the recording angle.
- If you play back tape recorded in Cinema Mode on a wide-screen (16:9) format TV, playback size is automatically adjusted to fit the TV screen format. Please refer to the TV's operating instructions for details.
- When images are displayed on a TV screen, the Date/Time Indication may be erased in some cases.
- Depending on the TV, the picture quality may be deteriorated.
- The Cinema Mode is cancelled when a Title is displayed. (NV-GS4/GS5 only)

Backlight Compensation Function

- When setting the Iris manually, the Backlight Compensation Function does not work.

Wind Noise Reduction Function

- It does not work with an external microphone.
- When it is set to [ON], directivity of microphone is regulated depending on the strength of wind to reduce wind noise.

Programme AE

- If any of the Programme AE Modes is selected, you cannot adjust the shutter speed **(➜ 23)** or iris **(➜ 23)**.
- You cannot use Sports Mode, Portrait Mode or Low-Light Mode with Gain-up Mode [GAINUP].

Sports Mode

- During normal playback, the image movement may not look smooth.
- Because the colour and brightness of the playback image may change, avoid recording under fluorescent light, mercury light or sodium light.
- If you record a subject illuminated with strong light or a highly reflective subject, vertical lines of light may appear.
- If the light is insufficient, the [ ] Indication flashes.
- If this mode is used for indoor recording, playback images may flicker.

Sports Mode/Portrait Mode

- If you record a still picture in Progressive Photoshot Mode, the brightness and hue of the recorded still picture may become unstable.

Portrait Mode

- If this mode is used for indoor recording, playback images may flicker.

Low Light Mode

- Extremely dark scenes may not be able to be made brighter to a satisfactory degree.

Spotlight Mode

- With this mode, recorded images may turn out to be extremely dark.
- If the recording subject is extremely bright, its recorded image may turn out to be whitish.

Surf & Snow Mode

- If the recording subject is extremely bright, its recorded image may turn out to be whitish.

White Balance

In the following cases, you cannot change White Balance:

- When you set [EFFECT1] of [DIGITAL EFFECT] Sub-Menu on the [CAMERA FUNCTIONS] Main-Menu to [GAINUP] or [EFFECT2] to [SEPIA] or to [B/W].
- When you set the Zoom to 10× or higher
- During Digital Still Picture Mode
- When you display a Menu
- When you use the Colour Night View

In the following cases, the [ ] Indication flashes:

- The flashing indicates that the previously adjusted White Balance setting is still kept. This setting will be kept until White Balance is adjusted again.
- You may not be able to achieve correct White Balance Adjustment manually under weak illumination.

Manual Shutter Speed Adjustment

- You may see vertical lines of light in the playback image of a brightly shining subject or highly reflective subject.
- During normal playback, movement in the images may not look smooth.
- Because the colour and brightness of the playback image may become unstable, avoid recording under fluorescent light, mercury light or sodium light.
- If you are using either Gain-up Mode **(➜ 24)** or Programme AE Mode **(➜ 21)**, you cannot adjust the shutter speed. If the shutter speed was adjusted manually, this setting will be cancelled.

Manual Iris Adjustment

- Depending on zoom magnification, there are iris values that will not be displayed.
- If you are using Programme AE Mode **(➜ 21)**, you cannot adjust the iris. If the iris is adjusted manually, this setting will be cancelled.
- If you attempt to adjust the Shutter Speed after setting the Iris, the value set for the Iris will be cancelled.

Digital Effect Functions

- It is not possible to use [MULTI], [P-IN-P], [WIPE], [MIX] or [TRACER] of [EFFECT1] together with the digital modes of [EFFECT2] on the [DIGITAL EFFECT] Sub-Menu.
- If you have set [EFFECT2] to [B/W] or [SEPIA], changing the selected White Balance Mode is not possible. **(➜ 21)**
- When [PROGRESSIVE] on the [CAMERA SETUP] Sub-Menu is set to [ON], the digital modes of [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu cannot be used. **(➜ 44)**

In the following cases, using the Digital Effect Function is not possible.

- Card Mode

It is as follows when [GAINUP] is selected.

- Manual Focus Mode
- The shutter speed and White Balance cannot be operated.
- The Sports Mode [ ], the Portrait Mode [ ] and Low Light Mode [ ] are cancelled.

Wipe Mode and Mix Mode

If either one of the following operations is carried out, stored images will be erased, and Wipe and Mix Functions cannot be used.

- Use the Camera Search Function
- Press the [STILL] Button

Picture-in-Picture

- If the Movie Camera is turned off, the smaller picture disappears.
- Titles cannot be inserted into the smaller picture.

Multi-Picture Mode

- If the [MULTI] Button is pressed while self-recording Mirror Mode **(➜ 17)** is used, the still picture is displayed from the upper right corner of the screen, but, in reality, the picture is recorded from the upper left corner as usual.
- Multi-Picture Mode cannot be used in digital still picture mode.
- The quality of Multi images deteriorates slightly.
- The top and bottom of the Multi pictures will be cut off slightly.

Playing Back

Repeat Playback

If you continue to press the [►] Button for 5 seconds or longer, the Movie Camera switches to Repeat Playback Mode, and the [R ▷] Indication appears. (To cancel Repeat Playback Mode, set the [OFF/ON/MODE] Switch to [OFF].)

Listening to Playback Sound through Headphones (NV-GS5 only)

If you want to use the headphones to listen to the playback sound, set [AV JACK] on the [AV IN/OUT SETUP] Sub-Menu to [OUT/PHONES] and connect the headphones to the [PHONES] Socket **(➜ 6)** on the Movie Camera. In this case, no sound (including a warning sound and shutter sound) will be reproduced through the built-in speaker of the Movie Camera.

Choosing Sound during Playback

You can select the sound by using the [AUDIO OUT] setting on the [PLAYBACK FUNCTIONS] Sub-Menu.

STEREO: Stereo Sound (main sound and sub sound)
L: Left channel sound (main sound)
R: Right channel sound (sub sound)

- If you dub a tape recorded at the [12bit] selected as the [AUDIO REC] on the [RECORDING SETUP] Sub-Menu, playback sound becomes stereo sound regardless of the [AUDIO OUT] setting if [12bit AUDIO] is set to [MIX].

Index Search Functions

- Index Search may not be possible at the beginning of tape.
- Because Photoshot Index Signals are not recorded on still pictures recorded in Continuous Photoshot Mode, the Photoshot Index Search Function cannot be used for these still pictures.
- Scene Index Search may not function properly if the interval between 2 scene index signals is shorter than 1 minute.

Playback Zoom Function

- You cannot adjust the sound volume with the Remote Controller in Playback Zoom Mode.
- If you turn off the Movie Camera power or if you switch from VCR Mode to Camera Mode, Playback Zoom Mode is automatically cancelled.
- Even if Playback Zoom Functions are being used, images that are output from the DV Terminal **(➜ 6)** or Digital Still Picture Terminal **(➜ 32)** are not enlarged.
- As you enlarge an image, the quality of image suffers.
- During a Playback Zoom, the Variable Speed Search Function cannot be changed with the Remote Controller.

■Playback Digital Effect Functions

- Signals of images to which digital effects are added during playback cannot be output from the DV Terminal **(➜ 6)** or Digital Still Picture Terminal **(➜ 32)**.
- You cannot use the Wipe or Mix Function while playing back the non-recorded portion of tape.

■Playing Back on Your TV

- If you set [AV JACK] on the [AV IN/OUT SETUP] Sub-Menu to [IN/OUT] with NV-GS5, nothing will be shown on the TV screen except during playback.

■Audio Dubbing

- The blank section of a tape cannot be dubbed.
- Sounds sent through the DV Terminal cannot be dubbed.
- If a tape has a non-recorded portion when the tape is dubbed, images and sounds may be disturbed when this portion of the tape is played back.
- If you set the tape counter back to 0 at the position where you want to stop Audio Dubbing so as to make it possible to use the Memory Stop Function **(➜ 52)**, Audio Dubbing is terminated automatically when the tape reaches this position.
- In the case of importing data recorded with Audio Dubbing to a PC using the PC's software programme, only the original sound (ST1) may be imported, depending on the software programme.

■Recording the Contents of Other Equipment

Recording to a Card

If you set the [TAPE/CARD/CARD MODE] Selector to [CARD], you can use the Card Photoshot function for external input signals.

- Black streaks may appear at the 4 edges of the image.
- When the [PHOTO SHOT] Button is pressed, the image may seem to move backward momentarily, but this does not affect the recording.
- If the [TAPE/CARD/CARD MODE] Selector is set to [VOICE], recording to a Card is not possible.
- During the recording with analog input, a Card Photoshot Function cannot be used.

Analog-Digital Conversion

- When the Movie Camera is connected with other digital video equipment through its DV Terminal, images recorded in analog form from other external equipment can be output to the digital video equipment through the DV Terminal.
- To DV-output analog video signals sent from other equipment, set [DV OUT] on the [AV IN/OUT SETUP] Sub-Menu to [ON]. (Normally, keep the [DV OUT] set to [OFF]. If it is set to [ON], the quality of the image may be disturbed.)

■Using the DV Cable for Recording (Digital Dubbing)

- Regardless of the setting, digital dubbing is carried out automatically in the same audio recording mode as that of the Cassette on the playback-side.
- The images on the monitor of the recording side may be disturbed, but it does not affect the recorded images.
- Even if Playback Digital Effects, Playback Zoom, or Playback Title In have been used, these effects are not output from the DV Terminal.
- Even if you use device equipped with DV Terminals (such as IEEE 1394), you may not be able to perform Digital Dubbing in some cases.
- Date or other information to be displayed cannot be displayed if the software of the connected equipment does not support the display function.

■Recording on a Card

- The Shutter Effect cannot be used.
- If [NORMAL] or [ECONOMY] is selected for recording, mosaic-pattern noise may appear on a playback image depending on the image content.
- During automatic copying tape pictures onto a Card, the number of pictures that can still be recorded on the Card is displayed. When it becomes [0], the Tape is set to the Recording Pause Mode.
- Pictures with wide-screen format signals cannot be copied.

Card Photoshot

- The sound cannot be recorded.
- The shutter speed becomes 1/50–1/500.

Recording Moving Pictures (MPEG4)/Recording Voice (Voice Recording Function)

- The file format supported by this Movie Camera is ASF. (Not all the ASF formatted files will be played back.)
- [PHOTO SHOT] Button does not operate.
- The sound is recorded in the monaural that is mixed [L] and [R] of the stereo sound.
- When the colour of the screen changes or blurs, adjust the shutter speed manually to 1/50, 1/100 or 1/125.
- The Zoom Microphone Function is disabled.
- The continuous recording time for voice depends on the capacity of the memory card. (24 hours, max.)

■Playing Back a Card

- If a blank (nothing recorded) Card is played, the screen becomes white and the [NO FILE] Indication appears.
- If you attempt to play back a file recorded in a different format or a file data is defective, the [×] Indication and the [CARD ERROR] Indication may appear as warning.
- When playing back a picture recorded by another equipment, its size and that of this Movie Camera may appear differently.
- This Movie Camera can also play back the Mega-Pixel still pictures recorded with the other equipment. However it takes longer than usual time.
- When playing back a picture recorded by another equipment, its size and that of this Movie Camera may be indicated differently.
- MPEG4 data cannot perform Cue/Review Playback, Slow Motion Playback (forward direction and reverse direction), Still Advance Playback (forward direction and reverse direction) or Jog Playback.
- There are no hardware or software compatible with the voice data. Even our Movie Camera products (NV-MX7), SD-Juke box and IC recorder (RR-XR320) compatible with SD Memory Card cannot playback the voice data. There are no hardware or software compatible with the voice data.
- For the MPEG4 moving pictures recorded on the camera other this camera, "×" may be displayed when they are played back. If the [►] Button is pressed in this case, [▷] will be displayed for a few seconds and the next image will be displayed.
- If an MPEG4 moving picture is played continuously for a long time, the playback may stop in the midway and the Movie Camera may freeze while a still picture is being displayed. Under the condition, press the [RESET] button.

Voice Power Save (NV-GS5 only)

- Voice Power Save Function is to turn off the monitor to reduce the power consumption when no operation is done in the Voice Recording Mode. When [VOICE POWER SAVE] on the [OTHER FUNCTIONS] Menu is set to [ON], the power save function is activated, and the screen turns off in a few seconds after some operations such as play or recording.
- The Voice Power Saving Function is cancelled when any operation is performed.
- Do not forget to turn off the power.

Recording a Card Image on a Tape

- If you attempt to record a still picture with a large image size on a Tape, there may be a reduction in the quality of the image.
- When recording the Card Images on a Tape, a Photoshot index signal is automatically recorded with a picture.
- Even if you edit the Slide Show, it is not applied to the order in copying the pictures.

Slide Show

- The playback time can be set from 5 to 99 seconds.
- Perform the Slide Show Settings with your Movie Camera in use.
- It may take playback time longer than usual time depending on the picture.
- When performing the Slide Show after the Titles are displayed, the Titles disappear.

Creating a Title

- When the [TAPE/CARD/CARD MODE] Selector is set to [MPEG4] or [VOICE], Title Creation Function is not possible.
- Even if the contrast of the Title is adjusted, the portions where there is little difference between light and dark and where the boundary between light and dark is unclear may not appear.
- The Title may not appear well if something small is used for it.
- If titles are created, the number of images that can be recorded on a Card decreases.
- If the number of images that can be recorded on a Card is small, you may not be able to create a title.

Adding a Title

- When the [TAPE/CARD/CARD MODE] Selector is set to [MPEG4] or [VOICE], Title In Function is not possible.
- The Title Function and Digital Effects cannot be used simultaneously.
- When a title is displayed in Playback Mode, the title is not output from the DV Terminal or Digital Still Picture Terminal.
- The Multi-Picture Mode cannot be used once the title is inserted.
- Original titles are added after the preset titles.

Lock Setting

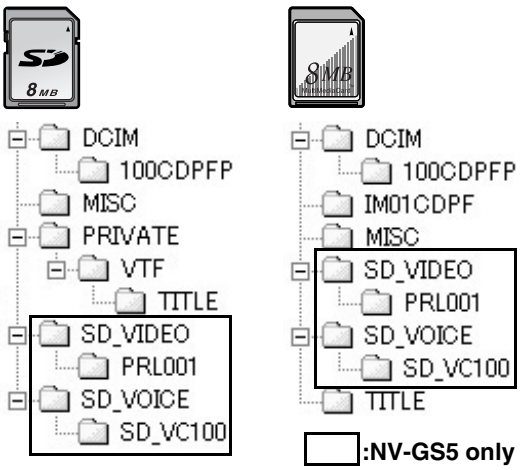
- The Lock Setting carried out by this Movie Camera is only effective for this Movie Camera.
- The SD Memory Card has a write protection switch on it. If the switch is moved to the [LOCK] side, you cannot write to or format the Card. If it is moved back, you can.

Using a Card in a Personal Computer (NV-GS4/GS5 only)

- To erase pictures that you recorded on the Card by using the Movie Camera, be sure to erase them on the Movie Camera, not on the computer.
- Using the optional DV Editing Software (Motion DV STUDIO) for Windows (VW-DTM20/21/22), variety of visual effects can be added and title can be created.
- You may not be able to properly play back or search the images on the Movie Camera after editing the recorded data or changing the image data on a personal computer.
- The image data files recorded on the Card with this Movie Camera conform to the DCF (Design Rules for Camera Files Systems universal standard) stipulated by JEITA (Japan Electronics and Information Technology Industries Association).
- Moving Picture format (MPEG4) that can be played back on this device is ASF. (Depending on the file, it may not be able to be played back even if it is in ASF format.)

Constructing a Folder when the Card is used with a PC

- When a Card with data recorded on it is inserted into a personal computer, folders will be displayed as in the figure.



[100CDPFP]: The images (Imga-0001.jpg, etc.) in this folder are recorded in the JPEG format.

[MISC]: Files in which DPOF Data has been set to the image are in this.

[TITLE]: This contains the data of the preset titles (Pre00001.ttl) and original titles (Usr00001.jpg, Usr00001.ttl, etc.).

[PRL001]: MPEG4 moving picture is recorded in ASF format (MOL00001.ASF etc.). It can be played back with Windows Media Player (ver.6.4 and later). Because of small size, this File is well suited for transmitting data through telephone line etc.. To play back moving picture with Windows Media Player, select a file and double click. Necessary software is automatically downloaded and starts playing back. (Internet connection is required.)

- [DCIM], [IM01CDPF], [PRIVATE], [VTF], [SD_VIDEO], [SD_VOICE], etc. are necessary items in the folder structure. They have nothing to do with actual operations.
- In the Card Photoshot Mode, the Movie Camera automatically saves file numbers (Imga-0001.jpg, etc.) along with the images. The file numbers are recorded with each image as a consecutive number.
- In the [SD_VC100] folder, the Voice data (Mob001.vml etc.) is recorded. It, however, cannot be played back on Personal Computer.

- The [SD_VOICE] folder and the Voice files in the folder are set as hidden. Depending on the settings of your personal computer, this hidden folder and these hidden files might not appear in Windows Explorer or the “My Computer” screen.
- The memory capacity indicated on the SD Memory Card label corresponds to the total amount of the capacity to protect and manage the copyright and of the capacity available as a conventional memory for a Movie Camera, Personal Computer or others.
  Capacity that can be used as conventional memory:
  8MB Card: about 6,800,000 bytes

The supplied SD Memory Card contains Preset title so the actual capacity may be smaller.

DPOF

- Perform the DPOF Settings with your own Movie Camera in use.
- Verifying the DPOF Settings may take a little time. Wait until the [ACCESS] Lamp goes out.

Cautions for Use

After Use

1 Take out the Cassette. (➜ 10)
2 Set the [OFF/ON/MODE] Switch to [OFF].
3 Take out the Card. (NV-GS4/GS5 only)
4 Detach the power supply and retract the Viewfinder or the LCD Monitor. (➜ 9, 11)
5 To protect the Lens, attach the supplied Lens Cap.

Cautions for Use

When you use your Movie Camera in a rainy or snowy day or on a beach, make sure that no water enters inside the Movie Camera.

- Water may cause the Movie Camera or Cassette to malfunction. (Irreparable failure may occur.)
- If sea water splashes onto the Movie Camera, wet a soft cloth with tap water, wring it well, and use it to wipe the camera body carefully. Then, wipe it again thoroughly with a soft dry cloth.

Keep the Movie Camera away from magnetized equipment (such as a microwave oven, TV, video game equipment, etc.).

- If you use the Movie Camera on or near a TV, images or sounds may be disturbed due to electromagnetic wave radiation.
- Do not use near a cell phone because doing so may cause noise to adversely affect the picture and sound.
- By strong magnetic fields created by speakers or large motors, recording on the tape may be damaged, or images may be distorted.
- Electromagnetic wave radiation generated by a microprocessor may adversely affect the Movie Camera, causing the disturbance of images and sounds.
- If the Movie Camera is affected by magnetically charged equipment and does not function properly, turn off the Movie Camera power and detach the Battery or AC Adaptor and then connect the Battery or AC Adaptor again. Thereafter, turn on the Movie Camera power.

Do not use your Movie Camera near radio transmitters or high-voltage lines.

- If you record pictures near radio transmitters or high-voltage lines, recorded images or sounds may be adversely affected.

Do not use this Movie Camera for surveillance purpose or other business use.

- If you use the Movie Camera for a long period of time, the internal temperature increases and, consequently, this may cause malfunction.
- This Movie Camera is not intended for business use.

When you use your Movie Camera on a beach or similar place, do not let sand or fine dust get into the Movie Camera.

- Sand or dust may damage the Movie Camera or Cassette. (Care should be taken when inserting and removing the Cassette.)

Do not spray insecticides or volatile chemicals onto the Movie Camera.

- If the Movie Camera is sprayed with such chemicals, the camera body may be deformed and the surface finish may peel off.
- Do not keep rubber or plastic product in contact with the Movie Camera for a long period of time.

Do not use benzine, thinner or alcohol for cleaning the Movie Camera.

- The camera body may be deformed and the surface finish may peel off.
- Before cleaning, detach the Battery or pull out the AC Mains Lead from the AC mains socket.
- Wipe the Movie Camera with a soft dry cloth. To remove stubborn stains, wipe with a cloth that is soaked in a detergent diluted with water and afterward finish wiping with a dry cloth.
- For storing or transporting the Movie Camera, place it in a bag or case lined with soft pads so as to prevent the coating on the camera body from being worn.

After use, be sure to take the Cassette out and detach the Battery from the Movie Camera or pull out the AC Mains Lead from AC mains socket.

- If the Cassette is left in the Movie Camera, the tape sags and deteriorates.
- If the Battery is left on the Movie Camera for a long time, the voltage drops excessively, and the Battery will not function even after it is recharged.

About AC Adaptor

- If the temperature of the Battery is extremely high or extremely low, the [CHARGE] Lamp may continue flashing, and the Battery may not be charged. After the temperature of the Battery has decreased or increased sufficiently, charging starts automatically. If the [CHARGE] Lamp continues to flash even after the Battery temperature has decreased or increased sufficiently, the Battery or AC Adaptor may be faulty. In this case, please contact a dealer.
- If the Battery is warm, charging takes a longer time than normal.
- If you use the AC Adaptor near a radio, radio reception may be disturbed. Keep the AC Adaptor 1 metre or more away from radio.
- When the AC Adaptor is in use, it may generate whirring sounds. However, this is normal.
- After use, be sure to pull out the AC Mains Lead from the AC mains socket. (If they are left connected, a minute amount of current is consumed.)
- Keep the electrodes of the AC Adaptor and Battery always clean.

Condensation

If the Condensation Indication flashes after the Movie Camera is turned on, condensation has formed inside the Movie Camera. In this case, the Movie Camera power is turned off automatically after about 1 minute.
Follow the steps below:

1 Take out the Cassette.
- None of the other functions operate. Depending on the amount of condensation, removing the Cassette may even become difficult. If this happens, wait for 2 to 3 hours before taking the Cassette out.

2 Open the Cassette Compartment Cover and wait for 2 to 3 hours.
- The number of hours to wait depends on the amount of condensation and ambient temperature.

3 2 to 3 hours later, turn on the Movie Camera power and check to see if the Condensation Indication is displayed.
- Even if the Condensation Indication is not displayed, as a precaution, please wait for another hour before using the Movie Camera.

Watch for Condensation even before the Condensation Indication is displayed.
- Because condensation takes place gradually, the Condensation Indication may not be displayed during the first 10 to 15 minutes of condensation formation inside the Movie Camera.
- In extremely cold places, condensation may freeze and form frost. In this case, the frost melts first, thus forming condensation, and then it takes another 2 to 3 hours to eliminate the condensation.

When the Lens is Fogged:
Set the [OFF/ON/MODE] Switch to [OFF] and leave the Movie Camera in this condition for about 1 hour. When the lens temperature becomes close to the ambient temperature, the fog disappears naturally.

Video Head Clogging and Care

If the heads (the parts that make contact with tape) are dirty, mosaic-pattern noise may appear on the playback image, or the screen as a whole becomes black. If the heads are extremely dirty, recording performance deteriorates, and, in the worst case, the Movie Camera cannot record at all.

Causes of Dirty Heads
- Large quantity of dust in the air
- High-temperature and high-humidity environment
- Damaged tape
- Long operating hours

Using Mini-DV Format Digital Video Head Cleaner

1 Insert the Head Cleaner into the Movie Camera in the same manner as a Video Cassette.

2 Press the [▶] Button, and approximately 20 seconds later, press the [■] Button. (Do not rewind the tape.)

3 Take out the Head Cleaner. Insert a Video Cassette and start recording. Then, play the tape back to check the recorded image.

4 If the image is not still clear, repeat Steps 1 to 3. (Do not use the Head Cleaner for 3 times or more consecutively.)

Notes:
- Do not rewind every time you use the Head Cleaner. Rewind only when the tape reaches the end, and then use it again from the beginning in the same manner as before.
- If the heads become dirty soon after cleaning, the tape may be damaged. In this case, immediately stop using that Cassette.
- Do not clean the heads excessively. (Excessive cleaning may cause excessive wear of the heads. If the heads are worn, images cannot be played back even after the heads are cleaned.)
- If the dirty heads cannot be cleaned with the Head Cleaner, the Movie Camera needs to be cleaned at a service centre. Please consult a dealer.
- Video Head Cleaners can be purchased from service centres.
- Head cleaning due to dirty heads is not considered a malfunction of the product. It is not covered by the warranty.

Periodical Check-up
To maintain the highest image quality, we recommend replacement of worn parts, such as heads, etc., after approximately 1000 hours of use. (This, however, depends on operating conditions, such as temperature, humidity, dust, etc.)

Optimal Use of the Battery

Battery Characteristics
This Battery is a rechargeable lithium ion battery. Its ability to generate power is based upon the chemical reaction that takes place inside it. This reaction is susceptible to the surrounding temperature and humidity, and, if the temperature is too high or too low, the operating time of the Battery becomes shorter. If the Battery is used in an extremely cold environment, the Battery may operate only for about 5 minutes. If the Battery becomes extremely hot, a protective function may operate, and the Battery may become unusable for a while.

Be Sure to Detach the Battery after Use
Be sure to detach the Battery from the Movie Camera. (If it is left attached to the Movie Camera, a minute amount of current is consumed even when the Movie Camera power is off.) If the Battery is left attached to the Movie Camera for a long time, over discharge takes place. The Battery may become unusable after it is charged.

Disposing of an Unusable Battery
- The Battery has a limited life.
- Do not throw the Battery into fire because it may cause an explosion.

Always Keep the Terminals of the Battery Clean
Prevent the terminals from getting clogged with dirt, dust, or other substances.
If you drop the Battery accidentally, check to see if the Battery body and terminals are deformed.
Attaching a deformed Battery to the Movie Camera or AC Adaptor may damage the Movie Camera or AC Adaptor.

■Cautions for Storage

Before storing the Movie Camera, take the Cassette out and detach the Battery.

Store all the components in a dry place with a relatively stable temperature.

(Recommended Temperature: 15 to 25°C, Recommended Humidity: 40 to 60%)

Movie Camera

- Wrap it with a soft cloth to prevent dust from getting into the Camera.
- Do not leave the Movie Camera in places that expose it to high temperature.

Battery

- Extremely high temperatures or low temperatures will shorten the life of the Battery.
- If the Battery is kept in smoky or dusty places, the terminal may rust and cause malfunctions.
- **Do not allow the Battery terminals to come in contact with metal objects (such as necklaces, hairpins, etc.). This can result in a short circuit or heat generation and, if you touch the Battery in this condition, you may be badly burned.**
- Store the Battery in a completely discharged state. To store the Battery for a long period of time, we recommend you charge it once every year and store it again after you completely use up the charged capacity.

Cassette

- Before storing it, rewind the tape to the beginning. If the Cassette is left for more than 6 months with the tape stopped midway, the tape sags (although it depends on the storage condition). Be sure to rewind to the beginning.
- Store the Cassette in its case. Dust, direct sunlight (ultraviolet rays), or humidity may damage the tape. Dust contains hard mineral particles, and dusty Cassettes damage the heads of the Movie Camera and other components. Develop a habit of returning the Cassette back to its case.
- Once every half year, wind the tape to the end and then rewind it to the beginning. If the Cassette is left for 1 year or longer without winding or rewinding, temperature and humidity changes may cause the Cassette to deform due to swelling, shrinking, and so forth. The wound tape may stick to itself.
- Do not place a Cassette near highly magnetic substances or equipment.
- The surface of tape is covered with extremely minute magnetic particles, upon which signals are recorded. Magnetic necklaces, toys, etc., have magnetic force that is stronger than you may normally expect, and they may erase the contents of a recording or may cause noise in images and sounds.

Card (NV-GS4/GS5 only)

- When the Card is being read, do not remove the Card, turn off the power, or subject it to vibration or impact.
- Do not leave the Card in places where there is high temperature or direct sunlight, or where electromagnetic waves or static electricity are easily generated.
- Do not bend or drop the Card. The Card or the recorded content may be damaged.
- After use, be sure to remove the Card from the Movie Camera.
- After usage, store the supplied SD Memory Card in the enclosed bag.
- Do not touch the terminals on the back of the Card with your fingers. Do not allow dirt, dust or water to enter it.

■LCD Monitor/Viewfinder/Lens Hood

LCD Monitor

- In a place with drastic temperature changes, condensation may form on the LCD Monitor. Wipe it with soft dry cloth.
- If your Movie Camera is extremely cold when you turn its power on, the image on the LCD Monitor is slightly darker than usual at first. However, as the internal temperature increases, it goes back to the normal brightness.

Extremely high precision technology is employed to produce the LCD Monitor screen featuring a total of approximately 112,000 pixels. The result is more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.

Viewfinder

- Do not direct the Viewfinder or Lens to the sun. Internal components may be seriously damaged.
- When the Movie Camera is used with a large capacity Battery (CGP-D28S/CGP-D320; optional) attached to it, it is not practical to look in the Viewfinder from behind the Battery. In this case, pull the Viewfinder to see easily.

Extremely high precision technology is employed to produce the Viewfinder screen featuring a total of approximately 113,000 pixels. The result is more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.

Lens Hood

- Do not attach other conversion lenses in front of the Lens Hood; there is no mount to be used for the attachment.
- When you wish to attach the Tele Conversion Lens (VW-LT3014E; optional), Wide Conversion Lens (VW-LW3007E; optional), MC Protector (VW-LMC30E; optional), or ND Filter (VW-LND30E; optional), first of all, turn the Lens Hood counterclockwise. If the MC Protector or ND Filter is used, the Lens Hood can be mounted on the filter.
- If you push the [W/T] Lever toward [W] during recording with the filter or conversion lens attached to the Movie Camera, 4 corners of the image may become dark (vignetting). For details, please refer to the operating instructions of your accessories.
- Be sure to keep the Lens Hood attached to the Movie Camera so as to shut out unnecessary light.

Before Requesting Repair (Problems and Solutions)

Power

1: The Movie Camera power cannot be turned on.

1: Is the power source connected correctly? **(➜ 9)**

2: The Movie Camera power is turned off automatically.

2: If you leave the Movie Camera in Recording Pause Mode for more than 6 minutes, the power is turned off automatically to protect the tape and to save the Battery power. **(➜ 17)**

3: The Movie Camera power does not stay on long enough.

3-1: Is the Battery low? Charge the Battery or attach a fully charged Battery. **(➜ 9)**

3-2: Has condensation occurred? Wait until the Condensation Indication disappears. **(➜ 49)**

Battery

1: Battery runs down quickly.

1-1: Is the Battery fully charged? Charge it with the AC Adaptor. **(➜ 9)**

1-2: Are you using the Battery in an extremely cold place? In cold places, the operating time of the Battery becomes shorter. **(➜ 49)**

1-3: Has the Battery worn out? If the operating time is still too short even after the Battery is fully charged, the Battery has worn out.

2: The Battery cannot be charged.

2: If the DC Input Lead is connected to the AC Adaptor, charging cannot be performed. Disconnect the DC Input Lead.

Normal Recording

1: Recording does not start although power is supplied to the Movie Camera and the Cassette is correctly inserted.

1-1: Is the accidental erasure prevention slider on the Cassette open? If it is open (set to [SAVE]), recording cannot be performed. **(➜ 10)**

1-2: Is the tape wound to the end? Insert a new Cassette. **(➜ 10)**

1-3: Is the Movie Camera power turned on? **(➜ 17)**

1-4: Is the [CAMERA] Lamp on? If the [CAMERA] Lamp is not on, no recording function can be operated. **(➜ 17)**

1-5: Has condensation occurred? Wait until the Condensation Indication disappears. **(➜ 49)**

Other Recording

1: Auto Focus Function does not work.

1-1: Is Manual Focus Mode selected? If Auto Focus Mode is selected, focus is automatically adjusted. **(➜ 23)**

1-2: There are some recording subjects and recording surroundings for which the Auto Focus Function does not operate correctly. In this case, use the Manual Focus Mode to adjust the focus. **(➜ 52)**

Editing

1: Audio dubbing cannot be performed.

1-1: Is the accidental erasure prevention slider on the Cassette open? If it is open (set to [SAVE]), recording cannot be performed. **(➜ 10)**

1-2: Are you attempting to edit a tape portion that was recorded in LP Mode? LP Mode does not allow audio dubbing to operate. **(➜ 16)**

Indications

1: The Time Code becomes inaccurate.

1: The Time Code Indication counter may not be constant in the reverse direction in Slow Motion Playback Mode, but this is not a malfunction.

2: The Remaining Tape Time Indication disappears.

2: When you record still pictures in Photoshot Mode, the Remaining Tape Time Indication may disappear temporarily. However, it reappears when recording normally.

3: The Remaining Tape Time Indication does not match the actual remaining tape time.

3-1: If scenes of less than 15 seconds are continuously recorded, the remaining tape time cannot be displayed correctly.

3-2: In some cases, the Remaining Tape Time Indication may show remaining tape time that is 2 to 3 minutes shorter than the actual remaining tape time.

Playback (Pictures)

1: Pictures cannot be played back even when the [►] Button is pressed.

1: Is the [VCR] Lamp on? If the [VCR] Lamp is not on, the playback function cannot be used. **(➜ 26)**

2: Mosaic-pattern noise appears on images during Cue, Review or Slow Motion Playback.

2: This phenomenon is characteristic of digital video systems. It is not a malfunction.

3: Although the Movie Camera is correctly connected to a TV, playback images cannot be seen.

3: Have you selected “Video Input” on the TV? Please read the operating instructions of your TV and select the channel that matches the input sockets used for the connection.

4: Playback picture is not clear.

4: Are the heads of the Movie Camera dirty? If the heads are dirty, playback image cannot be clear. **(➜ 49)**

Playback (Sound)

1: Sound is not played back from the built-in speaker of the Movie Camera or the headphones.

1: Is the volume too low? During playback, keep pressing the [PUSH] Dial until the [VOLUME] Indication appears. Then, turn the [PUSH] Dial to adjust the volume. **(➜ 26)**

2: Different sounds are reproduced at the same time.

2: [12bit AUDIO] on the [PLAYBACK FUNCTIONS] Sub-Menu of the [VCR FUNCTIONS] Main-Menu has been set to [MIX]. As a result, the original sound and sound that was recorded by audio dubbing are played back together. It is possible to reproduce the sounds separately. **(➜ 30)**

3: The original sound was erased when audio dubbing was performed.

3: If you perform audio dubbing on a recording done in [16bit] Mode, the original sound will be erased. If you wish to preserve the original sound, be sure to select [12bit] Mode at the time of recording.

4: Sounds cannot be played back.

4-1: Although a Cassette with no audio dubbing is being played, is [12bit AUDIO] on the [PLAYBACK FUNCTIONS] Sub-Menu of the [VCR FUNCTIONS] Main-Menu set to [ST2]? To play back a Cassette with no audio dubbing, [12bit AUDIO] must be set to [ST1]. **(➜ 30)**

4-2: Is the Variable Speed Search Function working? Press the [►] Button to cancel the Variable Speed Search Function. **(➜ 26)**

Card (NV-GS4/GS5 only)

1: Recorded pictures are not clear.

1: Is [PICTURE QUALITY] on the [CARD SETUP] Sub-Menu set to [NORMAL] or [ECONOMY]? If recording is done with it set to [NORMAL] or [ECONOMY], images with fine details may include a mosaic-like pattern. Set [PICTURE QUALITY] to [FINE]. **(➜ 34)**

2: Card Photoshot Playback images do not look normal.

2: The picture may be damaged. In order to prevent the loss of image data, backing up on a Cassette or a personal computer is recommended. **(➜ 32, 37, 47)**

3: During Playback the [×] Indication is displayed.

3: The image was either recorded in a different format, or data is damaged.

4: Even if a Card is formatted, it cannot be used.

4: Either the Movie Camera or the Card may be damaged. Please consult a dealer.

Explanation of Terms

■Digital Video System

In a digital video system, images and sounds are converted into digital signals and recorded on a tape. This complete digital recording is capable of recording and playback with minimal image and sound deterioration.

In addition, it automatically records data, such as Time Code and Date/Time, as digital signals.

Compatibility with S-VHS or VHS Cassettes

Because this Movie Camera employs a digital system for recording image and sound data, it is not compatible with conventional S-VHS or VHS video equipment that employs an analog recording system.

The size and shape of the Cassette are also different.

Compatibility with Output Signals

Because AV signal output from the AV signal output socket is analog (the same as conventional video systems), this Movie Camera can be connected with S-VHS or VHS video or a TV for playback.

■Focus

Auto Focus Adjustment

The Auto Focus System automatically moves forward and backward the focusing lens inside the Movie Camera to bring the subject into focus so that the subject can be seen clearly. However, the Auto Focus System does not function properly for the following subjects or under the following recording conditions.

Please use the Manual Focus Mode instead.

1) Recording a subject whose one end is located closer to the Movie Camera and the other end farther away from it
- Because Auto Focus makes adjustments at the centre of an image, it may be impossible to focus on a subject that is located in both foreground and background.

2) Recording a subject behind dirty or dusty glass
- Because the focus is on the dirty glass, the subject behind the glass will not be focused.

3) Recording a subject in dark surroundings
- Because the light information that comes through the lens decreases considerably, the Movie Camera cannot focus correctly.

4) Recording a subject that is surrounded by objects with glossy surfaces or by highly reflective objects
- Because the Movie Camera focuses on the objects with glossy surfaces or on highly reflective objects, the recording subject may become blurry.

5) Recording a fast-moving subject
- Because the focus lens-inside moves mechanically, it cannot keep up with the fast-moving subject.

6) Recording a subject with little contrast
- Because the Movie Camera achieves focus based upon the vertical lines of an image, a subject with little contrast, such as a white wall, may become blurry.

■Time Code

Time Code signals are data that indicate time measured in hours, minutes, seconds, and frames (25 frames per second). If this data is included in a recording, an address is assigned to each image on the tape.

- The Time Code is automatically recorded as a part of the sub-code at each recording.
- When a new (previously unrecorded) Cassette is inserted, the Time Code automatically starts from zero. If a recorded Cassette is inserted, the Time Code picks up from the point where the last scene was recorded. (In this case, when the Cassette is inserted, the zero display [0h00m00s00f] may appear, but the Time Code starts from the previous value.)
- The Time Code cannot be reset to zero.
- Unless the Time Code is continuously recorded from the beginning of a tape, accurate editing may not be possible. To ensure that the Time Code will be recorded with no breaks, we recommend the use of the Camera Search Function **(➜ 17)** or the Blank Search Function **(➜ 27)** before recording a new scene.

■Memory Stop Function

The Memory Stop Function is useful for the following operations.

Rewinding or fast-forwarding a tape to a desired position

1 Set [DISPLAY SETUP] >> [C.DISPLAY] >> [MEMORY].

2 Reset the Tape Counter to zero at the tape position from which you want to play it back later. (➜ 7, 13)

3 Start playback or recording.

4 After playback or recording has finished: Rotate the [OFF/ON/MODE] Switch and set the Movie Camera to VCR Mode.
- The [VCR] Lamp lights up.

5 Rewind the tape.
- The tape automatically stops approximately at the position where the counter was set to zero.

Stopping editing automatically during audio dubbing

1 Set [DISPLAY SETUP] >> [C.DISPLAY] >> [MEMORY].

2 Reset the Tape Counter to zero at the position where you want to stop editing.

3 Play back the still picture where you want to start audio dubbing.

4 Start audio dubbing. (➜ 30)
- Audio dubbing automatically stops at the position where the counter was set to zero.

Specifications

Digital Video Camera Information for your safety

Power Source:	DC 7.9/7.2 V
Power Consumption:	**(NV-GS1/GS3)** Recording 2.6 W (When using Viewfinder) 3.6 W (When using LCD Monitor) **(NV-GS4/GS5)** Recording 2.6 W (When using Viewfinder) 3.6 W (When using LCD Monitor)
Recording Format:	Mini DV (Consumer-use Digital Video SD Format)
Tape Used:	6.35 mm digital video tape
Recording/Playback Time:	SP: 80 min.; LP: 120 min. (with DVM80)
Video	
Recording System:	Digital Component
Television System:	CCIR: 625 lines, 50 fields PAL colour signal
Audio	
Recording System:	PCM Digital Recording 16 bit (48 kHz/2ch), 12 bit (32 kHz/4ch)
Image Sensor:	1/4-inch CCD Image Sensor
Lens:	Auto Iris, F1.8, Focal Length; 3.15–31.5 mm, Macro (Full Range AF)
Filter Diameter:	30.5 mm
Zoom:	10:1 Power Zoom
Monitor:	2.5-inch LCD
Viewfinder:	**(NV-GS1/GS3/GS4)** Electronic Viewfinder **(NV-GS5)** Colour Electronic Viewfinder
Microphone:	Stereo
Speaker:	1 round speaker ∅ 20 mm
Standard Illumination:	1,400 lx
Minimum Required Illumination:	1 lx (Colour Night View Mode)
Video Output Level:	1.0 Vp-p, 75 ohm
S-Video Output Level:	Y Output: 1.0 Vp-p, 75 ohm C Output: 0.3 Vp-p, 75 ohm
Audio Output Level (Line):	316 mV, 600 ohm
Video Input Level:	**(NV-GS5)** 1.0 Vp-p, 75 ohm
S-Video Input Level:	**(NV-GS5)** Y Input: 1.0 Vp-p, 75 ohm C Input: 0.3 Vp-p, 75 ohm
Audio Input Level (Line):	**(NV-GS5)** 316 mV, 10 kohm or more
Mic Input:	Mic sensitivity –50 dB (0 dB=1 V/Pa, 1 kHz) (Stereo mini jack)
Digital Still Picture:	Digital Still Picture Output, Control Signal Input/Output (Transfer rate: max. 115 kbps)
USB/Mini-System Ⓔ:	**(NV-GS4/GS5)** Card reader/writer function, USB 2.0 compliant (max. 12 Mbps) No copyright protection support/ Mini-System editing terminal
Digital Interface:	**(NV-GS1/GS4)** DV Output Terminal (IEEE 1394, 4-pin) **(NV-GS3/GS5)** DV Input/Output Terminal (IEEE 1394, 4-pin)
Dimensions:	Approx. 68 (W)×89 (H)× 114 (D) mm
Weight:	Approx. 470 g (without Battery and DV cassette) Approx. 550 g (with CGR-D08R and DVM60)
Operating Temperature:	0 °C−40 °C
Operating Humidity:	10%−80%
Card Memory Functions	**(NV-GS4/GS5)**
Recording Media:	MultiMediaCard, SD Memory Card
Image Compression:	JPEG
Video Compression:	**(NV-GS5)** MPEG4
Still Image Size:	VGA Recording, 640×480
Sound Compression:	**(NV-GS5)** G.726

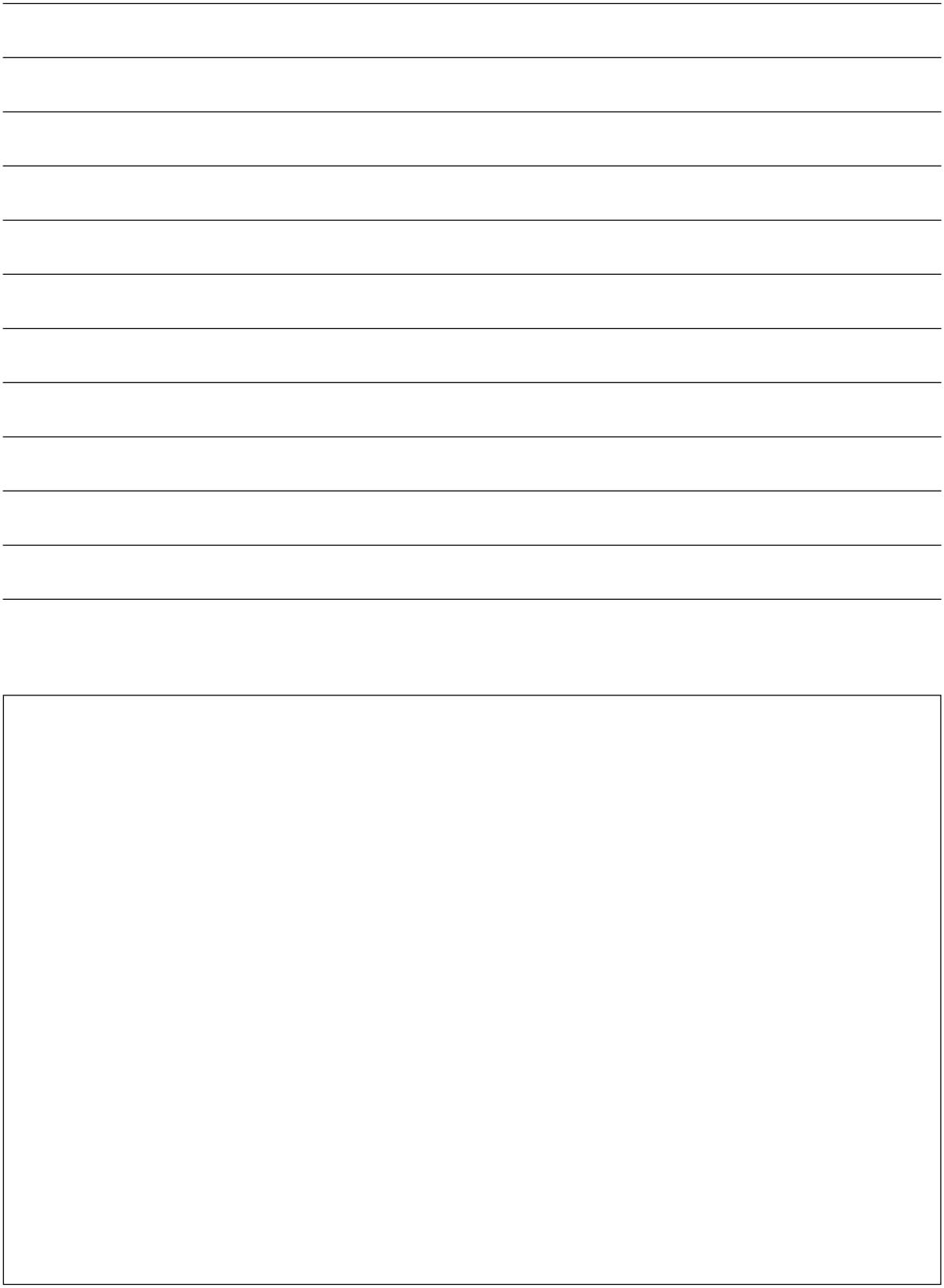
AC Adaptor Information for your safety

Power Source:	AC 100–240 V, 50/60 Hz
Power Consumption:	20 W
DC Output:	DC 7.9 V, 9 W (Movie Camera Operation) DC 8.4 V, 1.2 A (Battery Charging)
Dimensions:	70 (W)×45 (H)×116 (D) mm
Weight:	Approx. 165 g

Weight and dimensions are approximate values.
Specifications may change without prior notice.

Index

■A
AC Adaptor 9, 48
Audio Dubbing 30
Auto Focus 52
■B
Backlight Compensation 20
Black & White Mode 24
Blank Search 27
■C
Camera Search 17
Card Photoshot 33
Card Playback 36
Charging the Battery 9
Cinema Mode 20
Colour Night View Function 20
Condensation 49
Continuous Photoshot 18
Cue Playback 26
■D
Date/Time Indication 43
Date/Time Setting 16
Digital Effects 24
Digital Still Picture 18
Digital Zoom 19
DPOF Setting 41
Dubbing 31, 32
■E
Erasure Prevention Slider 10
■F
F Number 23
Fade 19
File Search Mode 37
Formatting 41
Free Style Controller 7
■G
Gain-up Mode 24
■H
Headphones 45
■I
Iris 23
■J
Jog Playback 27
■L
LCD Monitor 11
Lock Setting 40
Low Light Mode 21
■M
Macro Close-up 18
Manual Focus 23
Memory Stop 52
Menu Screen 12
Microphone 18
Mirror Mode 24
Mix Mode 24
Mosaic Mode 24
Moving Picture (MPEG4) Recording 35
■N
Negative Mode 24
■P
Photoshot 18, 33
Picture Size 37
Playback Digital Effects 29
Playback Zoom 28
Portrait Mode 21
Programme AE 21
■Q
Quick Start 20
■R
Recording Check 17
Recording Pause Mode 17
Recording Speed 16
Remaining Tape Time 42
Remote Controller 7
Repeat Playback 45
Review Playback 26
■S
Self-Recording 17
Sepia Mode 24
Shutter Speed 23
Slide Show 38
Slow Motion Playback 27
Solarisation Mode 24
Sound Volume 26
SP/LP Mode 16
Sports Mode 21
Spotlight Mode 21
Still Advance Playback 27
Strobe Mode 24
Surf & Snow Mode 21
■T
Time Code 52
Trailing Effect Mode 24
■V
Variable Speed Search 26
Video Head Clogging 49
Viewfinder 11, 50
Voice Power Save 47
Voice Recording 35
■W
White Balance 21
Wipe Mode 24
■Z
Zoom 18
Zoom Microphone 18



B

VQT9670
F0202To0 (5900 Ⓐ)
C

Matsushita Electric Industrial Co., Ltd.
Web site: http://www.panasonic.co.jp/global/